AMERICAN VETERINARY REVIEW.

DECEMBER, 1899.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

THE BARNACLES GATHER.

But three months ago, while the National Association was in session in New York, and the members were indulging in many adjectives to describe the great progress being achieved by our profession, and the high educational standard to which we had arrived, the REVIEW was called upon to record the establishment of a two-year so-called veterinary school in Tennessee, with a faculty containing a number of veterinarians, some of prominence, but who announced that their names had been used without their knowledge or consent, and at once forbade their further employment. In so short a time as the present we find ourself in possession of the prospectus of the "San Francisco Veterinary College," located at 510 Golden Gate Avenue, in that Western metropolis. It was chartered in 1899, and "incorporated under the provisions of Part IV, Title XVII, of the Civil Code of the State of California, May 22, 1899." The calendar reads as follows: "Monday, June 5, 1899, session opens; July 3 and 4, 1899, holiday; Monday, Nov. 27, 1899, final examinations commence; Monday, Dec. 4, 1899, commencement." "The course of study covers two collegiate years of six months each, beginning the first week of June and ending the first week of December." The announcement further states that "it will attain a high standing among educational institutions, and is endorsed by the veterinary and medical professions." Just how the dissecting room is to be arranged is

not stated, but it is likely that the students will have to be placed on cold storage during the hot summer months.

We sincerely believe in the claims of veterinarians that our profession is making great strides in closing the gap between us and other advanced sciences, and the statement becomes more marvelous when it is reflected that there are so many elements tugging in the opposite direction.

THE CONVENTION OF 1900.

The contest of the various cities of the country to obtain recognition by the Executive Committee of the A. V. M. A. of their claims for the Convention of 1900 has been more spirited than ever before, which we regard as a most encouraging symptom of the healthful state of the profession generally. Many of the candidates have gone at the task systematically and with vigor, urging their availability with intelligent persistency, putting forth every ingenious arguments which would tend to influence the Committee to decide in their favor. Chairman Butler arose to the importance of the situation, and prepared an elaborate circular letter embodying the claims of the various contestants for the guidance of the members of the Committee toward a wise and just decision, so that every phase of the question could be thoroughly weighed before voting. The veterinarians of Minneapolis, Detroit, and Milwaukee were most unanimous and insistent, and, while there were many others in the field, we expect to hear in a short time that the Convention of 1900 will be held in one of these three cities.

THE AUTUMN HORSE SHOWS have been greater both in the quality and quantity of the exhibitions, and the attendance and interest superior to anything in their history. How well this speaks for the popularity of the horse and his firm entrenchment in the hearts of the people, where he will remain forever and forever. The horse show should be kept pure and above suspicion, as it is a great educator of the people, and inspires them with a higher appreciation of the soliped, as it is there

that they see him at his best, and it is there that their taste is cultivated and the desire to possess him intensified. The veterinarian can do much to strengthen an interest in these exhibitions, and to insist upon their purity, and he should not omit an opportunity of doing so.

We take much pleasure in announcing that, beginning with the January number, Prof. L. A. Merillat, of the McKillip Veterinary College, Chicago, Ill., will conduct for the Review a "Department of Surgery." The reputation of this well-known veterinarian as a surgeon of the first rank is such that we can promise our readers a rare treat for the coming year, and we extend to them our congratulations in advance. All correspondence relating to this department should be addressed to Prof. Merillat direct.

ORIGINAL ARTICLES.

NEW THEORY OF THE ETIOLOGY OF SHOE-BOIL.

By George J. Goubeaud, D. V. S., Brooklyn, N. Y.

Read before the New York County Veterinary Medical Association at its October Meeting.

As in other arts and sciences, so it is in medicine: those cherished ideas and opinions we possess we are loath to cast aside. In most of our text-books, the authorities tell us that shoe-boil is caused by the improper application of the shoe; the heels being too long press upon the skin of the elbow and the structures beneath it, while the horse is lying in the recumbent position, injuring them, thus producing the characteristic lesion termed capped elbow or shoe-boil. The character and unsightliness of the enlargement, and also the complications, depend upon the extent of the injury, duration, and the continued application of the cause producing it. It is not my intention nor purpose to enter into a consideration of the pathology of this

affection nor to describe the various degrees which the injury can attain, neither will I consider its therapy, aside from the element of prevention. Therefore the etiology alone will be considered.

I well remember how attentively I listened to those older in the profession than I describe to clients how an animal would produce a shoe-boil, when they brought a patient having such a disfigurement for treatment. After the injury, for such it is, had been attended to, instructions would be given for the prevention of its recurrence, and invariably they were told that the heels of the shoe should be shortened so that they could not possibly press upon the elbow; a padded ring should be placed around the coronary region, and a bar or strip of wood placed in about the centre of the stall, so that the animal could not put the foot under him without causing itself great inconvenience, discomfort and a still greater amount of pain; and in recent years some have advocated the rubber pad or shoe, so that it is, as it were, impossible for the animal to injure himself by lying upon the iron shoe, and as a result prevent all liability to produce a recurrence of the affection.

I believed firmly in what I had been taught. I employed the principles for prevention faithfully. The cause which was ascribed to it seemed to me to be reasonable, and I applied the above lines of treatment for prevention; but, alas, I met with many a successful failure. It is true that in some instances I had no recurrence of the trouble, but in the majority of cases I had subsequent attacks, the severity of the injury depending upon the intensity of the cause. I know that my patients had short-heeled shoes, and of late years a rubber pad for a shoe, a bar of wood across the stall, and I believe that the shoe-boil ring had been regularly placed in position every night. All these agents were employed as preventive measures, and still there were recurrences of the injury. Now, it is reasonable to suppose that others have done the same thing, and have met with the same success, for it is not possible that all my cases were exceptions. The shoe, or the hoof, cause shoe-boil, or they do not. I

have been taught and told that it is caused by first the shoe and then the hoof, or by the foot, and if not by the hoof, then by the shoe. Opinion seems to be equally divided as to which causes it. Either one or both of these agents cause shoe-boil, or they do not, and if they cause shoe-boil, how is the injury produced, and if they do not cause shoe-boil, then what does produce it?

The question: how and why shoe-boils arise, has been perplexing my mind, and as a result I think I have come to a successful conclusion as to their origin. For this reason I offer it to the members of this society for their consideration.

Ulnar hygroma, as it is scientifically termed, has been ascribed, aside from my own opinion and observations, to be directly due to pressure, the result of the shoe being improperly applied to the foot, or to the foot itself. Our latest authorities claim that the shoe alone causes it, giving various reasons why it is thus produced, and describe the manner of its production. The animal is either improperly shod, the heels of the shoe are too long, or they are purposely made long in order to correct some abnormal condition of the foot or gait. The animal while in the recumbent position rests the elbow upon the heels of the shoe, thus injuring the skin and sensitive structures beneath, resulting in the characteristic tumor. First and foremost, if such be the case, I cannot understand how a result can exist produced by a cause which has no existence.

I have seen colts which never had a shoe upon their feet with shoe-boils, and I have seen horses without shoes have shoe-boils come on over night. I have seen horses without shoes turned in a loose box stall, and horses without shoes turned out in a pasture lot have shoe-boils develop; and yet they wore no shoes. Others have observed the same occurrence, and it seemed to make no difference. Shoe or no shoe, they had shoe-boils. I have seen horses wearing the rubber pad have shoe-boils, and in two instances the pad was advocated as a preventive measure, and still there were recurrences in both cases. I have seen horses shod with the half shoe or tip develop shoe-boil, and also cases of acute laminitis and injured feet develop

shoe-boil during treatment; still these cases wore no shoes.

Secondly, I can't understand how an animal can lie with comfort and ease in the recumbent position and injure his elbow so severely as to produce shoe-boil and its complications—even to a fracture of the olecranon. The skin and underlying structures of the elbow region are sensitive. They will not admit of any pressure without the animal evincing signs of pain and discomfort. The animal will not lie sufficiently long upon the shoe or foot to cause this abnormality. The position itself is abnormal; the animal cannot rest with ease, and he will not lie in this position. Supposing, for the sake of argument, that the animal with shoe does lie in this position, would not the skin and underlying structures suffer more severely than they do by resulting in sloughing, due to the pressure of the skin and structures beneath. We will say that a pressure of 200 lbs. is applied to the elbow for half an hour, would we not have a large slough take place, due to interference with the circulation? Would not a slough of this region be common? But a slough does not take place. It is rare. But when it does occur it is not the result of pressure, but of acute inflammation, terminating in pus formation, and the part which has become injured becomes gangrenous. The skin breaks, thus making an exit for the imprisoned pus. Would not this result be common? Would not the complications be grave due to the danger of septic infection? Would not their removal be an uncommon procedure? How often would we be called to enucleate the mass of new tissue which has formed?

I think very seldom. Suppurative inflammation would do that—and there would be no reason for our interference. If the heel of the shoe causes shoe-boil, why is it that horses which never had the affection become diseased after wearing pads for periods ranging from two months to two years? The rubber is soft, pliable and flexible. It cannot possibly cause an injury. It yields to pressure, and still these horses have shoe-boils. I could go still further in proving that the shoe does not, by any means, nor under any circumstances, cause shoe-boil, but suffi-

cient has been said, so I will take up the subject of the foot as a factor in producing this affection. The same arguments and many more can be advanced against the foot as a factor or agent in producing shoe-boil. The questions arise: if a horse has shoe-boils, and they are caused by his feet, how are they caused, and upon what part of the foot does the horse lie? One professional gentleman told me that the horse places the elbow between the two heels of the shoe, and lies upon the frog, thus producing it, and to substantiate his statement I was shown the horse. He had a shoe-boil. Upon investigation I found that it had existed six months, with two recurrences of the trouble. He was then shod with the rubber pad. In fact, all four feet were so shod. Further inquiry developed the fact that he had been so shod continuously for two years previously. Being so shod he could not possibly lie upon his frog. Secondly, it is a physical, mechanical and anatomical impossibility for an animal to lie upon his frog. He cannot flex the foot while in the recumbent position, for the knee is already flexed as much as it can be. The frog idea I think is settled, for a horse cannot possibly lie upon his frog. I thus claim that the heels are the offending agent. They state that the animal rests upon the heels, thus producing shoe-boil, and some add that if the animal would only turn the heels in or out it could not rest upon them, and I have often thought that if such be the case why would it not be easier to turn the shoulder and elbow in or out than the foot. The shoulder and elbow have all motions which are not possessed by any of the articulations from the knee down. The rubber pad when it projects beyond the frog prevents an animal from lying upon the heels. I have seen no difference. Others claim that an animal rests the elbow upon the rim of the shoe, and if a shoe be not upon the foot then it rests the elbow upon the wall, either the inside wall or the outside one. If such be the case, then why is it that a horse with very narrow, contracted heels (so much so that the pad projects almost one inch on either side, so that the animal cannot touch the foot with his elbow because of the pad) can develop shoe-boil? I ask, what caused it in such

a case? This animal could not bring his elbow in contact with the foot because of the presence of the pad, neither could he rest upon his frog or heel, and still his case presented a well-developed tumor of the elbow. I have not as yet heard that a horse can lie upon his toe or sole. It is possible that he might do so, but I have not seen that kind of horse. Now, supposing that the horse does rest the elbow upon the foot, and supposing that the weight upon each foot is 100 lbs. Take a hoof pincer and squeeze the foot to about a 25-pound pressure. Watch how he yields and squirms. Continue the pressure; watch how he jerks away the foot. Continue the pressure, and, unless you are heavier than I, you will dangle in the air like the tail end of a kite before a stiff breeze. You will say that this kind of pressure is too localized. Well, place an inch and one-half iron plate on the wall and one upon the sole and bars. I can assure you that if the animal has a sensitive foot and is nervous you will do it only once. Compress both walls, or the inside heel, and the outside quarter, and you have the same result. Now, suppose that the animal's foot is devoid of sensation, and two large poultices of bran are placed upon his feet. He could not lie upon his feet because of the largeness of the poultices. The poultices are anything but hard, and still this horse develops two large shoe-boils over night. Now, suppose you had a case of sloughing of the plantar cushion, and your patient had a poultice of bran upon his foot that extended almost to the knee. It was sufficiently large to make three ordinary poultices, and this horse develops shoe-boil. Now, how could the hoof cause shoe-boil in these two cases, when the elbow and foot were over three inches apart, and separated by a soft pad or cushion? Still these two cases had shoe-boils. In order to keep the foot and shoe away from the elbow the shoe-boil ring is ordered. It is made twice the average size, and placed above the foot every night. The one ring is put on to prevent a recurrence, and the other is placed above the foot to act as a preventive. The owner sends for you three months afterwards, and you find a well-developed tumor upon the elbow of the leg which had not been previously

affected. You tell him that he simply neglected to place the shoe-boil ring above the foot. The result is that he points to the shoe-boil rings which are still upon the horse's legs to show you that they had not been as yet removed. In spite of the fact that all known precautions were taken to keep the foot away from the elbow, such as shoe-boil rings, rubber shoes, a bar of wood across the stall, and a well-bedded stall, he developed a shoe-boil; and still I ask what caused that tumor? I will go still further, and ask what caused this shoe-boil: A horse becomes unmanageable and attempts to run away. While at the top of his speed the driver gives it a sudden, sharp and quick pull on the lines. He immediately falls in almost the same position which he had while leaping in the air. To be brief, his position was that of an animal about to assume the standing position. Resting upon the sternum, front feet extended, head up, and the rest of the body still upon the ground. While in the position which I have just described he slid over the rough or cobblestone pavement for a distance of six feet. Beside minor skin abrasions, he received a lacerated wound of the skin of the left elbow about two inches long and running from right to left, which necessitated suturing. Upon the right elbow he received a few skin abrasions which at the time appeared to be most trivial. The animal was backed into a stall and tied up, so that he could not possibly lie down, fearing that the sutures might tear away the skin. Six hours afterwards the animal was again seen. Now, the elbow presented a different appearance. The left elbow region was swollen to about twice its normal size. The sutures began to give way, and through the edges of the wound there escaped serum tinged with blood. The right elbow presented a typical shoe-boil. Although the tumor has decreased quite considerably, still there remains an enlargement about the size of an orange. Upon the left nothing remains but a scar, with a slight thickening of the skin. Now, what was the cause of these shoe-boils? He did not have them previous to being hitched to a wagon.

Take the case of the horse with a large shoe-boil and of long

standing. You will usually find in the centre of the mass a raw granulating surface varying in size from that of a five-cent piece to that of a silver dollar, generally circular in form. It never seems to heal, and remains always about the same size. If seen in the morning, we will find the sore spot covered with dirt, oats and a few blades of hay or straw. Examine his feet and shoes. No blood will be found upon them, or if some be found, it is only in spots or drops, where it has fallen from the tumor, but not in one large spot, which would necessarily be the case if he lay upon the tumor. Again, I ask what is the cause of this circumstance?

For the time being I will turn to the cow. While I have had very little practice among cattle, still I remember seeing one case of what appeared to be shoe-boil. I have spoken to others, and while they admit that it is very rare, still it does exist. A condition of the elbow commonly seen in cattle is that of a raw granulating wound, with a thickened surface, and greatly thickened edges. By some it has been described as a bed sore. It is seen usually in those cattle which extend the leg upon the side they lie on. I have seen during my observations this position assumed by animals which were kept in close confinement, and where one animal was forced to stand while the other rested itself. Cows do not wear shoes. Their feet are not like those of horses; their feet cannot touch the elbows; their position is different from that of the horse, and still they can have shoe-boils. Again, who among us having a canine practice, however small, has not seen fibrous tumors upon the elbows of dogs, usually those of the large variety. Yet dogs do not wear shoes, and they cannot lie upon their feet. Still they have these tumors. Take wild animals, such as the lion, tiger and bear, kept in captivity, and you will see the same thing. Or examine a number of camels, and you will surely find one among the number which possesses this abnormality. Take man, for instance, and you will often find a small tumor upon his elbow. It is soft, painless, slightly fluctuating, and also slightly moveable. Ask him how it came there. The an-

swer is invariably that he fell and struck the elbow upon the ground or against a door or perhaps he was chopping wood. Now, if shoe-boils are not caused by the shoe, and I think that I have proven that horses and colts which never wore nor had them on their feet at that particular time, have shoe-boils, and, if the shoe does not cause this affection, then the foot does; and if the foot does not, what is the cause? I have shown that animals without shoes and animals that cannot lie upon their feet suffer from hygroma of the elbow, and I hope if I am right to be able to prove the correctness of my views, and if I am wrong I ask to be set right.

I am unfortunate in the fact that medical science has for me many bugbears, and one of them is the subject of which I am speaking. I have given the subject earnest and long thought, serious and painstaking consideration. I know that my ideas are radical, for I have never heard nor read of them before, and for that reason I have been loath to express them; but, having the courage of my convictions, I do so, asking your consideration. Like every student, I believed implicitly in what I had been taught; I simply did as I was told; but, alas, I have met with many a successful failure, and in this instance I had as many failures as I had successes. The failures I would not have had had that which I had been taught been true, for the simple reason that the preventive measures are mechanical. They are easily applied. I was taught that all that was necessary was to keep the elbow away from the foot, or shoe, or both, which I did to a positive certainty, and, *presto*, you would have no recurrence; but, *presto* forgot itself. I did have subsequent attacks. This resulted in reflection, and so, right or wrong, I offer it for what it is worth.

Having had abundant opportunity for observing on an average of 85 sale horses resting every night for seven years, I took particular pains in watching just how they would lie. I am sure I saw little or no difference in the position which they would assume, aside from those affected with shoe-boil. It is true that I saw horses lie upon the heels of their shoes, or they

appeared to assume that position; but, if the heels were long they would lie only a minute or two and then shift themselves to a more comfortable position, and even if they did lie in this position for a longer period of time, which was only so in rare instances, I saw no shoe-boil result. This position seemed uncomfortable and they would not stay in it long. They could be seen to shift themselves just as soon as the position became uncomfortable, which was very soon. I remember one animal in particular, which did not lie upon the shoe, but when the long-heeled shoe was removed he laid upon the foot, and he did this for three weeks. He was then sold, after which I lost track of him. This animal had no shoe-boil, neither was there any indication of any skin affection to lead me to suspect that the skin was bruised or chafed. The same can be said of the foot and much more. It is true that I have seen horses lie upon their feet and remain in that position some time. I have seen it, I admit; yes, but how much weight or pressure was there upon the foot? I say not much, if any. If there was I could not dislodge it with perfect ease, and if the elbow and foot rested one upon the other, and they bore their respective weights in proportion to the rest of the limb, I assure you it would take more than a slight pull to change that position. Take the case of a horse weighing 1900 lbs., lift the knee and pull the foot forward, and unless you are accustomed to pulling heavy objects I am afraid that you will need a porous plaster. The animal bears little or no weight upon the foot when compared to the rest of the limb. Take the case of the horse with turned-in toe or pigeon-foot, as it is called. It is a physical and an anatomical impossibility for him to lie upon his foot. I have seen two inches of space between the foot and elbow, and this individual horse had two shoe-boils of about two years' standing. I was informed that they had been removed, but had returned. I have noticed that horses with turned-in toes rarely have shoe-boil. But this can be accounted for by the fact that they are not very common.

The position which I have found animals assume, and which

I firmly believe to be the cause of the affection, is that an animal will, while attempting to assume the standing position, and which he will necessarily have to do, is to extend the foot and flex the knee, thus forming an arch with the foot and elbow resting upon the ground. While attempting to assume the standing position he strikes his elbow forcibly upon the floor or ground, injuring it, and thus producing this lesion. In the course of my investigations, I have seen this occur twice, the animals evincing symptoms of acute pain and lameness till the following morning. I also noticed that those which were predisposed to this affection were animals that assumed this position when recumbent, and they slept with the head between the knees, and the nose resting upon the floor. I rarely saw them assume this position in a loose or box stall, but always in a straight stall. They usually rested with one side of the body close to the side of the stall. It will often occur when the animal becomes frightened and rises suddenly. It will then strike its elbow upon the floor in a forcible manner, thus injuring it. I know one instance when this occurred. I removed a splinter of wood, about the size of a match, from the skin of the elbow region. The animal was very lame for over a week, after which it gradually passed off, and he made a good recovery, with no recurrence. I know of another instance in which a horse had a large shoe-boil. A diagnosis of this affection was made, complicated with synovitis of the elbow joint. He was destroyed three months after. A post-mortem developed an incomplete fracture of the olecranon, with a beginning ankylosis. It developed afterwards that the animal was kicked by another horse upon the point of the elbow, which resulted in the condition described. In the course of my investigations I have found that animals which had a tendency to develop this affection were those which invariably pawed their bedding back and preferred to lie upon the bare boards. I do not know of a chronic case that did not do this. The bar of wood keeps the bedding in front, so that it cannot be pawed back, and it also raises the sternum so that the elbow cannot touch or strike the ground forcibly.

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The preventive treatment consists of two pads, one for each elbow. They fit around the arm and up over the elbow, extending into the arm pit, and are kept in position by a strap which goes over the withers. It is a crude affair, and if perfected would positively prevent shoe-boil.

ROUTINE MANIPULATIONS AND OPERATIONS FROM THE STANDPOINT OF ASEPSIS AND ANTISEPSIS.

By William Herbert Lowe, D. V. S., Paterson, N. J.

Former United States Veterinary Officer of the Port of New York.

Read before the 36th Annual Meettng of the American Veterinary Medical Association.

It is certainly a very nice thing to treat a rare disease, or to perform some unusual operation, but the success of the average veterinary practitioner depends far more, in my opinion, upon his personal adaptability, his power of observation, introspection, his methods, modus operandi, experience, judgment and dexterity exercised in the routine manipulations and operations of his practice than in the occasional performance of some rare and unusual operation. Too much importance cannot be laid upon intelligent and thorough attention to method and detail in our every-day practice. The principles underlying all surgical procedure are the same whether the case be the treatment of an ordinary wound or the performance of one of the more difficult and delicate operations known to veterinary science.

Some people are always waiting for an opportunity to do some wonderful thing and let thousands of little matters go by that, taken advantage of, would have been productive of surprising results. Success comes to the great majority of people by being able and doing ordinary and common things well. The same is true of the surgeon. Compare the number of times you make an examination or dress an ordinary sore or wound to the number of times you are called upon to perform one of the major surgical operations, and you will, I think, agree with me that the routine manipulations and operations are worthy of our consideration at this time and in this place.

More attention should be given in our veterinary schools to the training of students in the art, as well as the science, and we would not see graduates of the best schools, who are well educated, not able to diagnose and to put into practice what they have been taught, and making mistakes that are evident to laymen, to say nothing of good horsemen.

In the first place, a man should not study veterinary medicine unless he is naturally adapted for the profession. I sometimes see practitioners, who, I think to myself, ought to be behind the counter selling calico instead of practicing veterinary medicine. The fact is that a man, in order to make a good veterinarian, should understand the habits, functions, nature and disposition of different animals, how to go around them, to handle, restrain and control them. He should be a judge of a horse, and a good horseman in the higher sense of the term.

If he has not the natural adaptability and these acquirements, he cannot be considered a qualified veterinarian. I do not care how much scientific and other knowledge he may have, or from what college or university he may have graduated, he is out of his element, and cannot successfully cope with the man with natural intuition and characteristics, other things being equal.

There are many difficulties that are constantly confronting the veterinary practitioner that are not met with in the practice of human medicine. Our patients cannot tell us, in articulate language, anything. This fact is often referred to by laymen as well as by professional men. They tell us a good deal, however, if we are sufficiently observant and experienced to understand their language. Every attitude, every position of head, body and limb, and every movement has a significance and tells to the trained veterinarian the nature and condition of his patient with just as much certainty, yes, often more certainty and accuracy, than the human being tells his physician of his symptoms and ailments.

Another difficulty is that the commercial value of each patient is, as a rule, taken into consideration in determining

whether the animal is to have treatment or not, and if treatment, to what extent and cost, his commercial value, rather than his necessity, being the chief factor in determining the matter, whereas, in human practice, no commercial value is ever placed upon a patient.

Another difficulty, and the one that should receive the most attention in the consideration of routine manifestations and operations, is the importance and necessity of aseptic and antiseptic measures in all surgical procedures and dressings. In human medicine, again, our brethren have a decided advantage, so far as aseptic and antiseptic precautions and measures are concerned. The principles involved are essentially the same, but their application is far more difficult, and sometimes impossible, in veterinary surgery, as the means available to the veterinary surgeon for satisfying the demands of these principles are not equal to those in human practice. Purification of the air where the animal is kept, complete sterilization and prevention of infection, position, rest and immobilization in our patients are problems that to a large extent remain to be solved.

Herbert Spencer says that knowledge is useful in proportion to its application. Aseptic and antiseptic principles of science are of real value to the veterinary practitioner only to the extent that he is able and painstaking enough to put these principles into his everyday practice. It is a comparatively easy thing for any modernly educated veterinarian to outline the principles and practice of aseptic and antiseptic surgery, and as a practititioner he may have the disposition, but he will not always have the opportunity and ability to effect complete sterilization of everything on and about his patient.

The chief question at the present time is how to most perfectly bring practice into accord with knowledge, so as to secure the best results in the ever-varying and widely different conditions in our routine work. It is my opinion that it is in the application of scientific facts and doctrines now well understood that the chief achievements in the near future are to be expected. In the past most all, if not all, the attention and credit was

given to the skill displayed in the operating and mechanical part, with little or no intelligent care and after-treatment. Fully as much attention should be given to aseptic and antiseptic precautions and methods, for the science of bacteriology has taught us the relations of micro-organisms to the disturbances of wound healing and the importance of preventing infection in simple as well as in extensive wounds; therefore, asepsis and antisepsis are at the very foundation of all routine manipulations and operations, if science is the handmaid of our art.

Aseptic wounds include all which are preserved from contamination or infection of any kind. An aseptic condition in a wound may be obtained either by the protection the wound received from the first against the access of any septic agent, or by the power of living tissues to resist and destroy septic agents, or by the application to the wound of substances which destroy them. As long as asepsis is maintained no decomposition of the secretions or tissues take place, no sloughing of killed or partly killed tissue occurs. When the proper cares to favor the nutrition of the wounded tissue are rendered, the healing of the wound progresses without pain, inflammation, or suppuration, and the least possible amount of cicatricial tissue is produced. To secure an aseptic condition, or to approach it as nearly as possible, is the first and most important indication in all our surgical work and treatments.

Septic wounds include all in which any agent capable of exciting tissue irritation and cell necrosis lodges and grows. They may present the most widely different degrees of wound disturbances dependent upon the varying conditions which the special wound may present, and upon the character of the treatment which is instituted, but in all cases they are attended with some degree of inflammation and suppuration, and with sloughing of dead tissue. The septic agent may be introduced by the body that inflicts the wound, or by the dressings that are applied, or may be among the dust particles that float in the air to which it is exposed. In very rare cases, it may be conveyed to the wound through the blood of the animal sustaining the wound.

There are many modifying influences among animals as to their individual ability to recover from an injury or surgical interference. Of animals in apparently good physique, and enjoying the same hygienic surroundings and treatment, one will recover from a serious injury or surgical operation speedily and without serious complication, while in the other an injury, apparently much less severe, may end fatally or in prolonged illness.

The power of resisting the effects of extraneous influences to some degree is a characteristic of all living matter. Its cessation is death. The quality of the vital resisting power inherent in the constitution of an animal cannot be estimated by any known signs. It may be modified by other conditions, but in some degree it is always present as a powerful unknown factor influencing the result of any case.

Mental impression, shock from injury, old age and pre-existing organic disease are factors that influence the result of treatment.

There are constitutional differences, such as plethora, anæmia, obesity, that have to be taken into consideration by the practitioner. The temperament, the breed, œstrum, pregnancy, season of the year, faulty hygienic and sanitary conditions, previous overfeeding, previous underfeeding, exhaustion from overwork, exhaustion from physical strain, deleterious effects of vicious habits; these are some of the more marked examples of influence which, by their effect upon bodily nutrition in general, aggravate and affect the result of all routine manipulations and operations.

Good hygienic conditions, by their relations to the functions of nutrition, exert important influence upon all cases. The stimulating effects of sunlight upon nutrition should be regarded in hygienic management. Next to the necessity of fresh air supply, that of sunlight should be provided in arrangement of hospital wards. There is an instinctive craving for the light innate in all living creatures, which becomes more marked whenever, from any reason, there is a depression of vital power.

Insufficient air is synonymous with impure air, for the

purest air, if not renewed with sufficient frequency, becomes speedily contaminated by the exhalations and effete material from the animals of those breathing it. This, which is true in health, is still more quickly accomplished when the animal is diseased. It becomes, therefore, more important for the well-doing of the sick animal than for the welfare of the well that an unlimited supply of pure air should be provided. When to the natural sources of air contamination there are added the emanations of suppurating wounds, the need of constant change in the surrounding air is more emphatic still, if its purity is to be preserved. While air is the great oxygen carrier for the needs of the living body, it receives in exchange from the body the débris of its disintegration. It is the vehicle of transportation of an infinite variety of floating matter, the great mass of which is organic in character. Putrescible organic matter cannot long be exposed to the air without becoming the recipient of putrefactive germs from it. Aseptic wounded surfaces quickly become septic when exposed by reason of the floating septic particles that are conveyed. The best stimulant to the vital resisting power of a living tissue, by which the effects of sepsis are antagonized and overcome, is perfectly oxygenized blood. The air thus carries both the bane and antidote. The practical end, therefore, to be aimed at, in any given air-supply, is that there shall be as small a proportion of the bane and as large a proportion of the antidote as possible. This involves the removal, the suppression, or the diffusion, as much as possible, of all sources of contamination, and the dilution of that which is unavoidable by the introduction of the largest quantity practicable of the purest air attainable. The purity and the sufficiency of the air are thus seen to have a double relation to the healing of wounds, one in a general relation, which the air shares with other hygienic conditions, and the other a special relation as a carrier of and an antidote to sepsis. The hygienic conditions in the wounded animal must be made as good as possible before the whole duty of the surgeon is accomplished.

The relation of micro-organisms to suppurative inflammations is one of great importance in its bearing upon the healing of wounds. While not all forms of micro-organisms are capable of exciting suppuration, nor are micro-organisms the only agents that are competent to excite suppuration, yet the proof is conclusive that the suppurative diseases that complicate wounds, and the acute suppurative inflammations that occur in animals, are caused by the vital activity of various forms of micro-organisms that find in the wounds the conditions that favor their development and increase.

The result to be expected in routine manipulations and operations depends very largely upon the practicability to carry out methods by means of which the access of micro-organisms to, or their development in wounds, can be prevented or diminished, for where disturbances of repair are escaped the healing is sure, speedy and perfect. If septic infection could be altogether prevented there would scarcely be any bounds to the possibilities in the domain of veterinary surgery. No decomposition or fermentation takes place in organic matter without the agency of some form of micro-organism, and where no extraneous organism has gained access to a wound, no wound disturbance occurs. Certain forms of micro-organisms are always found associated with certain forms of wound disturbances. Clinical experience shows that where protection from the invasion of micro-organisms is secured there is an immunity from wound disturbances.

The recognition of the activity of micro-organisms as the essential cause of disturbances of repair in wounds supplies a scientific basis for treatment and affords a definite principle by which to test methods of wound treatment. It is not the organisms themselves that are the irritants that directly cause wound disturbance, but the products that are formed in the course of this growth and multiplication, either directly secreted by themselves or formed by the decomposition of the substances on which they feed. These secondary products—ptomaines—are poisons or septic agents, and the results in gen-

eral of their action upon the living tissues with which they come in contact constitute *sepsis.* Whatever tissue or wound-surface is contaminated by these ptomaines is in an *aseptic* condition, and whatever method or means antagonizes their production, or antidotes, restricts, or removes the results of their presence, is an *antiseptic.*

The ideal treatment of a wound is that by which a perfectly aseptic condition should be obtained and presented; where this is impracticable, the object of treatment becomes changed to the application of means to diminish the activity of the septic organisms, to secure the rapid removal of their products, and to increase the resisting power of the wounded tissues.

Cleanliness is the very first essential in all our routine work; in fact, there is no such thing as asepsis without absolute cleanliness. I do not know how to sufficiently emphasize the importance and actual necessity of cleanliness in each and every detail, if we expect to obtain the best possible results. Practitioners with unkept surroundings, and who in their actual daily practice belittle their calling by their disregard of water and their careless toleration of dirt, will not be expected, much less inclined, to carry out the scientific principles laid down in this paper. Fortunately this indifferent and careless class of veterinarians have to give way to the more competent and worthy.

In addition to the resources of cleanliness for preserving wounds from becoming the seat of the vital activity of micro-organisms, there still remains to the veterinary surgeon the employment of direct applications to wound-surfaces of substances which have the power either to destroy them outright or to restrain their growth. These agents are classified as antiseptics and their use as above constitutes wound disinfection.

The possibility of obtaining antiseptic results in a wound by agents that simply restrain the growth of septic organisms, as well as by those that destroy them, is a matter of great practical importance, for it has increased the number of substances available for antisepsis, and since the preventive effects of many

agents can be accomplished by much smaller amounts than their destructive effects, it has been found possible to obtain their antiseptic effects with less local irritation of the wound itself and less liability of danger from absorption of poisonous quantities of the agent into the blood.

In estimating the usefulness of any agent as an antiseptic application in the treatment of wounds, three things have to be taken into consideration:

1. Its power as a bactericide or as a restrainer of bacterial multiplication.

2. Its immediate local effect on the wound surfaces—neutral, irritant or caustic.

3. Its remote constitutional effect when absorbed into the circulation.

The bacteria of different species manifest different degrees of vital resistance to chemical reagents.

The following table exhibits the strengths needed to destroy the vitality of the micrococci of pus, or to prevent the development of the organisms. The practical application has found its place rather in the preliminary disinfection of materials likely to come in contact with wounds in the course of formal surgical operations than in applications to wounds themselves.

TABLE OF BACTERICIDAL STRENGTHS.

Reagents.	*Efficient in the proportion of one part in*
Mercuric bichloride	20,000
Potassium permanganate	833
Iodine	500
Creosote	200
Sulphuric acid	200
Carbolic acid	100
Hydrochloric acid	100
Zinc chloride	50
Tincture ferri chloride	25
Salicylic acid dissolved by sodium borate	25
Citric acid	8
Chloral hydrate	5

The following table shows the minimum quantity required to prevent the development of the pyogenic micrococci:

TABLE OF STRENGTHS REQUIRED TO RESTRAIN BACTERIAL MULTIPLICATION.

Reagent.	*Efficient in the proportion of one part in*
Mercuric bichloride	35,000
Iodine	4,000
Sulphuric acid	1,800
Carbolic acid	500
Salicylic acid and sodium biborate, equal parts	200
Boracic acid	200
Ferric sulphate	200
Sodium biborate	100
Alcohol	10

The foregoing tables are from Dr. L. S. Pilcher's work on "The Treatment of Wounds," recently issued. I am also indebted to the same author for much valuable data in connection with the subject under consideration.

Comparison of the two tables shows that the more potent bactericides have the power of resisting multiplication in quantities considerably less than are required to destroy vitality. In the case of iodine, the difference is eightfold; in that of carbolic acid, fivefold; in that of sulphuric acid, fourfold, etc.

In addition to those soluble agents, marked antiseptic power attaches to many substances which are insoluble or comparatively so. These include iodoform, napthaline, zinc oxide, bismuth subcarbonate, subnitrate, suboxide and subgallate, aristol, ariol, iodol, nosophen and other similar compounds. The common property of this group of agents is the inhibition by their presence of bacterial growth and multiplication. To some of them attaches also a chemotatic power; that is to say, the power to stimulate the accumulation of living energetic cells in the wound-surfaces and borders. The effect of this is to strengthen the local resisting power of the tissues and to favor rapid repair.

Carbolic acid, the agent first used in the application of modern antisepsis, and used so extensively by Lister, is now largely replaced by other agents. The properties that commend carbolic acid for use as an antiseptic are its reliability and its diffusibility. Its disadvantages are the local irritation which it ex-

cites, its volatility lessening its usefulness as an agent to secure permanent antisepsis, making frequent renewals of the dressings necessary, which renewals violate another fundamental principle of wound-treatment, that of rest; its toxic qualities, dogs and cats being particularly susceptible. Carbolized ointment and solutions of carbolic acid in oil or alcohol have been shown by Koch to be absolutely inert in respect to their action on bacterial life, either on the spores or the fully developed organisms. Anthrax spores introduced into oily solutions of carbolic acid, of thymol, and of salicylic acid, in each at the end of three months were still found capable of development. When, however, the oily solution comes in contact with substances containing water, it undoubtedly gives up part of the acid to these and in this way antiseptic effect may be produced. Carbolic acid is used to good advantage in the antiseptic bath for the immersion of metallic instruments.

Creolin, *cresol*, and other products of coal-tar distillation have largely superseded carbolic acid. These substances have marked antiseptic power, do not produce so much local irritation, and are less toxic. They form milky emulsions when mixed with water, and have been used in such emulsions of from two to five per cent. strength.

Salicylic acid and *boracic acid* are feeble bactericides, but potent as restrainers of bacterial activity. They are devoid of the irritating and poisonous effects of corrosive sublimate and carbolic acid.

Corrosive sublimate is largely used as an antiseptic. Koch found that the spores of the bacilli of anthrax, though unaffected by other antiseptics, were killed in a few minutes by a solution of corrosive sublimate, 1-1000, and to have been prevented from developing by a solution of 1-5000. The necessity for changes of dressing with corrosive sublimate are rare. The danger of poisoning from absorption is slight when in the hands of the competent practitioner. Corrosive sublimate is the most reliable agent available for the disinfection of fresh wounds that are known or presumed to be infected. For this purpose 1-5000

aqueous solutions are used. It is much used also in the strength of 1-1000 or 1-2000 for the disinfection of the skin in regions that are to be operated upon, and for the disinfection of the hands of surgeons and assistants.

Iodine and Iodoform.—The antiseptic properties of iodine are manifold greater than those of carbolic acid—as a bactericide five times, and as a restrainer of bacterial growth eight times as great—but it has attracted general attention only since the introduction into use, as an antiseptic, of its compound, iodoform. Iodoform did not irritate the wound; it was used both as an application to the wound-surfaces and as an external antiseptic, protective dressing; its decomposition or its volatilization was so slow that the frequency of the dressings required was greatly lessened. The odor and the toxic qualities of the drug were the chief disadvantages that limited its use. It diminishes secretion, decomposes ptomaines and stimulates leucocytosis, and when itself decomposed liberates the germicidal iodine. Aristol, airol, iodol and nosophen are among the other iodine compounds used as substitutes for iodoform.

Salts of Bismuth.—Bismuth subnitrate and bismuth subgallate are of value especially when used as a powder to be dusted over the skin surrounding a wound, to restrain the activity of epidermal organisms, and as a powder applied to granulating surfaces to promote its cicatrization.

Salts of Zinc.—Zinc oxide is especially worthy of mention and commendation as a dusting powder in the treatment of burns, excoriations and abrasions, and for use upon the skin about a wound and along a suture line. It restrains the activity of the epidermal organisms. It is of itself perfectly unirritating, and with serous secretions forms a bland and soft magma. A mixture of equal parts of zinc oxide and of water, with the addition of 10 per cent. of zinc chloride, forms a paste which, when applied to wounds, rapidly dries into a firm protective crust or artificial scab.

Zinc chloride is very soluble in water and in the stronger solutions is perfectly caustic. A strength of 1-50 is required to

destroy pyogenic organisms, and in this strength the living tissues are affected by it, a zinc albuminate being formed which appears as a white translucent film covering the surface to which it has been applied. Its use is restricted to the disinfection of wounds that are already frankly septic. Solutions of from 5 to 8 per cent. strength should be used. The film of zinc albuminate which results is markedly resistant to new bacterial invasion, and further restrains exudation and protects mechanically the underlying tissue. This combination of qualities makes it an antiseptic agent of the greatest value in veterinary practice in dealing with sores and open infected wounds.

Among antiseptic agents may be mentioned aluminum acetate, acetanilid, hydrogen peroxide, mercuric iodate, naphthalin, beta-naphthol, pyoktanin, formic aldehyde and heat.

Heat.—The temperature of boiling water, 212° F., is sufficient to quickly destroy all known pathogenic bacteria. Most spores are also destroyed by this degree of moist heat, but so marked a power of resistance inheres in some spores that they are not destroyed by even so long an exposure as two hours. For insuring the absolute destruction of all spore life the method of *fractional sterilization* is available.

None of the ordinary pus-forming bacteria are spore bearers, so that their destruction, in such dressings and instruments and materials to be used in wound-treatment as will not be injured by moderate heat, is simple and rapid. When micro-organisms in a desiccated state are exposed to dry heat, a much higher temperature is required for their destruction than when they are moist or when they are exposed to the action of hot water or moist steam. For destroying the ordinary pyogenic organisms exposure to at least 212° of dry heat for one hour is required, but to insure the destruction of spores an exposure of three hours or more to a temperature of 284° F. is necessary.

The possibility of using heat conveniently in the shape of boiling water or of steam for the absolute and certain destruction of bacteria has caused these agents to very largely supersede chemicals for the disinfection of instruments, dressings and

many of the accessories used in the treatment of wounds. Thermic sterilization is much more readily and certainly accomplished than is chemic sterilization.

The Dressings.—For absorbent and protective purposes the chief part of a wound dressing is composed of suitable pieces of loosely woven, thin, gauzy, cotton cloth, similar to the "cheesecloth" or "buttercloth" of the shops; this constitutes the *gauze* of the surgeon. Other absorbent materials may be substituted according to the convenience of the particular case, such as pads of moss or of sawdust, masses of the cotton fibre known as engineer's waste, or of soft absorbent paper, or quantities of oakum, jute or "wood-wool"; but the superior convenience and the unequalled absorbing qualities of the gauze have caused it to be accepted almost universally by practitioners of human surgery as the staple dressing material. It also has an important place in surgical dressing in veterinary practice. This dressing, like all other dressings and everything else, requires sterilization. Steam sterilization is convenient and effectual.

Boro-Salicylated Moist Dressings.—For the absorption of primary wound-discharges a moist dressing is superior, and in view of the imperfect character of all skin sterilization, it is always more prudent to have the dressing which comes in direct contact with the skin in the vicinity of a wound moistened with a solution, which at least shall inhibit bacterial activity. Corrosive sublimate solutions at once suggest themselves on account of their potency as a bactericide, but they are too irritating to the skin to be left on many hours in contact with it, and if used freely are liable to provoke the poisonous effects of the absorption of the drug. Carbolic acid is equally objectionable. Boracic and salicylic acids, feeble bactericides but potent as retainers of bacterial activity, are free from the objections named as to corrosive sublimate or carbolic acid, and may be used in a solution made by dissolving one ounce of boracic acid and eighty grains of salicylic acid in a gallon of boiled water, for the preparation of a moist antiseptic absorbent dressing.

Cotton wool, tow, oakum, jute, turf moss, sawdust and many other materials are used for surgical dressings. They can be impregnated with such antiseptics as the surgeon considers indicated. In veterinary practice the animal must be tied or secured so that he cannot bite or tear the dressings and bandages off.

I trust that I have said enough to inspire veterinarians to be more painstaking in their routine manipulations and operations. If there is any part of the routine practice that veterinarians are remiss in it is in carrying out the principles of aseptic and antiseptic surgery. The same principles apply to major surgery, and the practitioner who applies these in his everyday practice will be able to apply them also and obtain better results in such major operations as he has to perform.

We want in the veterinary profession to-day men with common sense, common honesty and ability and a disposition to do the ordinary routine practice methodically and well, who will practice up on the latest scientific aseptic and antiseptic methods; men who are willing to confine their efforts to the legitimate limits of the profession; men who are horsemen in the highest sense of the term, but who are not horse dealers, horse jockeys or liverymen; men who are working to earn all the money they can legitimately, but who would not sell their birthright for a "mess of pottage."

AMERICAN VETERINARY MEDICINE.

By R. S. Huidekoper, Vet. (Alfort).

Response to a Toast at the Banquet given to Prof. A. Liautard, at the 25th Anniversary of the American Veterinary College, Manhattan Hotel, New York, September 5th, 1899.

Mr. Chairman and Gentlemen:

The toast given to me to respond to, "American Veterinary Medicine," is so closely associated with the man whom we meet to do honor to to-night, that what I can say in response to

it would be almost equally appropriate had the title been Alexander Liautard.

I ask you, gentlemen, to join me in a bumper to him, scientist, practitioner, teacher, friend, a native of the country which first gave birth to veterinary schools, and stands at the head of the veterinary profession to-day, and an adopted son of this our great country, which has been so much benefited by his sojourn amongst us, that his name will be an indelible landmark in American veterinary medicine.

Dr. Liautard! your health!

Any history of veterinary medicine in America is practically confined to the last half of this century, with the exception of an attempt made in 1806, by Dr. Benjamin Rush, the great physician, patriot and statesman, who endeavored at that time to have a veterinary school added to the University of Pennsylvania. For the rest of the first fifty years of the century we can find no trace of any advance being made. Early in the fifties Dr. George Dadd, a man who seems to have been of more than usual intelligence, appeared in Boston and organized an attempt at a veterinary school; and at the same time published, for a year or two, a veterinary journal. The school itself seems to have been soon abandoned, though the books and seal of it passed to other hands and went to Philadelphia, and afterwards into Ohio, and further West, where, on into the sixties, diplomas were issued bearing the forged signatures of men already dead and others.

In 1857 an act for the incorporation of the New York College of Veterinary Surgeons was signed at Albany, and an organization was commenced, with Dr. John Busteed as Professor of Anatomy and Surgery, but only a paper organization was kept up for several years without any real work being done.

1862 is the year from which dates the commencement of a tangible effort in the establishment of a body of veterinarians, who were to give to American veterinary medicine its first history. A number of veterinarians met in Philadelphia to perfect an association which was the origin of what was to

become the American Veterinary Medical Association of to-day. They purchased a minute book, which I believe is still used by the association, but a general quarrel seems to have taken place and the records of the first meeting were destroyed—you will find in the book to which I refer the stubs of the first pages which have been cut out.

On the 9th of June, 1863, a meeting was called at the Astor House, in New York, which is generally now considered the first meeting of the association.

Among those present were: Wm. A. Wisdom, of Delaware; Dr. John Busteed, Alexander Liautard, R. S. Copeman, R. H. Curtis, A. Large, Wm. J. M. Cown, Louis Brandt, C. C. Price, W. Bannister, John Budd, E. Nostrand, Charles Burden and James Mulligan, of New York; Chas. M. Wood, E. M. Thayer, Wm. Saunders, R. Farley, J. H. Stickney, James Penniman, O. H. Flagg and R. Wood, from Massachusetts; E. F. Ripley, from Maine; R. McClure, G. Mellor, J. C. Essenwein, E. H. Palmer and Isaiah Michener, from Pennsylvania; G. W. Bowler, Ohio; Jacob Ditts, J. C. Higgins, W. R. Mankin, R. Jennings, A. Phillips, Jacob Phillips, J. C. Walton, A. C. Budd and S. Humphrey, from New Jersey; and J. K. Quickfall and John Arnold, from London.

This meeting seems to have given a more general interest and active start in veterinary affairs.

Drs. Rawson and Busteed, and Alfred Roe, Esq., obtained a number of subscriptions, and by arrangement with Dr. Liautard, leased his infirmary at 179 Lexington Avenue, for college and hospital purposes. On November 23, 1864, they opened the New York College of Veterinary Surgeons. Dr. Liautard was appointed Superintendent of the Hospital, and was the first professor of Anatomy, Operative Surgery and Clinics.

Dr. James Robertson was one of the first graduates, and he became a member of the teaching faculty in 1868. In that year a reception was given to Prof. Gamgee, of London, who visited this country to investigate cattle diseases.

During this decade there were few graduate veterinarians in

this country. Dr. Liautard held his diploma from the Imperial Veterinary School of France; Dr. Stickney, of Boston, had received his from the Royal Veterinary College, London; and the dozen others were foreigners, mostly Englishmen, with the Royal College degree. In 1875 the apple of discord again fell into the cage of the profession and the faculty of the New York College resigned almost in a body and organized the American Veterinary College, which is now completing its quarter century of existence.

This decade saw the establishment of the two veterinary schools in Canada, and the founding of the AMERICAN VETERINARY REVIEW, by the U. S. Veterinary Association, with Prof. Liautard as its first editor. Up to this time the meetings of the United States Veterinary Medical Association had been confined to Philadelphia, New York and Boston.

In the eighties more rapid strides were made. The United States Veterinary Medical Association extended its meetings to Cincinnati, Baltimore, and the West, securing a membership really more national in character. Three-year veterinary schools were established at Harvard, and the University of Pennsylvania, and a number of veterinary schools sprang up through the West, in Ohio, Illinois, Iowa, Minnesota, Kansas and elsewhere. The Bureau of Animal Industry was founded in 1884, under the strong guidance of Dr. D. E. Salmon, and after exterminating contagious pleuro-pneumonia from the American continent, became a power which brought the value of the veterinarian before the public and gave new openings for a livelihood to the veterinary graduates of the new schools.

In 1880 the *Journal of Comparative Medicine and Veterinary Archives* was established. During the eighties a number of State veterinary and other local societies were organized, one of which, that of Pennsylvania, whipped and led by the untiring zeal of Dr. W. Horace Hoskins, has become a rival of the American association in the value of the work it has done.

The last decade of the 19th century has seen a steady advance in the work of the previous ten years. The United States

Veterinary Medical Association has spread its ægis still further West, and over the Southern mountains of Tennessee, and it has extended its hand of professional brotherhood to Canada in the North, becoming the "American" instead of the "United States" Association. Most of the two-year schools of former days have increased their standard of education to the recognized minimum of a three-years course.

Laws regulating the practice of veterinary medicine and establishing State boards of veterinary examiners, have been enacted in a number of States, and show a good disposition on the part of the various communities, however stupidly and justly they may, like many other laws, err in their results.

This closing year of the century finds old differences healed here in New York City and an amalgamation of the two colleges which separated twenty-five years ago, but which now put shoulder to shoulder under the new name of the New York-American Veterinary College, or the Veterinary School of the New York University, with Professor Liautard still holding the reins. Now that unity has been established, we will hope to see the Assembly at Albany give to the Metropolitan school the same financial support which it does to its rural sister in Ithaca.

In literature there has not been as much accomplished as might be hoped for. The AMERICAN VETERINARY REVIEW and the *Journal of Comparative Medicine* stand proud peers of their European colleagues, but their standard of excellence has been at the sore cost of labor and money of a few enthusiastic individuals. Some valuable scientific writings have emanated from the pens of employees of the Bureau of Animal Industry. Of practical veterinary works, Prof. Liautard stands at the head of the authors, in numbers and value of his works.

Mr. Chairman and Gentlemen, I have occupied more time than I intended to do and yet find I have only given a summary of what I would like to have said. I believe the data of my headings to be accurate and that a detailed history of American veterinary medicine during this century would be valuable and

interesting if one would take the time to compile it. It has been a great pleasure to be at this meeting, and I thank you for your attention.

But, Mr. Chairman, I will detain you for one word more: I believe that I have forgotten myself as a factor in the making of the history of American veterinary medicine. When, as an assistant of Dr. Joseph Leidy, the anatomist, and Dr. D. Hayes Agnew, the surgeon, I took their advice; that the study of veterinary medicine opened up a field for a more interesting and broader scientific life than the routine of a simple human practitioner and prepared myself to found the Veterinary Department of the University of Pennsylvania; when I broadened my conception of animal life by becoming a comparative anatomist instead of remaining a simple human anatomist; when I worked during two years in the laboratories of Nocard, Chauveau and Pasteur, Virchow and Koch, and Ercolani, familiarizing myself with the bacteriological studies which led to our present knowledge of tuberculosis, glanders, and the other contagious diseases; when, as a teacher for twenty years I found that my most interesting teacher and my most valued knowledge came from my study of Comparative Physiology, Pathology and Hygiene; finally, when I added the diverse scientific knowledge, given me by my study of veterinary medicine, to the knowledge of human medicine which I had acquired at the University of Pennsylvania, and in fifteen years of human practice, and had had the experience of fifteen years as a Chief Medical Officer of the National Guard of Pennsylvania, in which I had charge of such bodies of men as the thousands remaining in the Conemaugh Valley after the Johnstown flood, and 7500 troops of Pennsylvania during the Homestead riots: then, gentlemen, I was amused, though some of my friends were annoyed, last year when I became the best advertised and the most universally damned "Horse Doctor" in America.

The yelping of the jackal newspapers, playing upon the hysterical sentiment of the public, because they had no further sensational war news, or other exciting information to furnish,

and who wanted to commence an attack on the administration, had picked me, because I had widened my knowledge of medicine in learning the scientific truths of diverse animal life instead of limiting it to that of one animal, man, and, found opprobrium in the title of "Horse Doctor." To me personally the attacks of that portion of the press were like water on a duck's back. I knew that I had the confidence and recognition of my work, which was all I desired, of the President, of the Secretary of War, of General Miles, and of my own Commanding General, Major-General Brooke, now Governor-General of Cuba. I knew that the First Army Corps, of which I had the medical charge, had a better organization, better hospitals, more medical supplies, and, up to the time I left Chickamauga for Puerto Rico, a smaller sick list and death rate than that of the other corps of the army. All this is record in the official papers in Washington, and will be history when they are published. Therefore, I had no cause to regret that I was, and I am proud that I am, a veterinarian.

FATAL PNEUMOMYCOSIS IN THE HORSE.

By James Law, M. R. C. V. S., Ithaca, N. Y.
Dean of the New York State Veterinary College.

Read before the New York State Veterinary Medical Society, September 9, 1899.

I wish to draw attention to some of the clinical features of a microbian affection of the horse, which so far as I know has not been described in veterinary literature. The bacteriological character of the disease will be treated of by Dr. Moore.

The first intimation of the disease came to us in a letter from Dr. Charles H. Cook, of Rochester, which will sufficiently explain itself. He says: "I was called about fourteen miles northeast of here yesterday, in consultation with Dr. Burns, of Fairport, to see some horses. There were three horses originally, all on the farm, and all were taken Dec. 10: pulse 65; temperature 101.4; lips cracked, somewhat swollen; throat sore; some difficulty in swallowing, but ate a little. Dec. 11:

pulse 50; temperature 100°; apparently improving, and discontinued visits. Dec. 14 called to one which was worse again, but owner said the other two were all right. The one he was called to had pulse 75, temp. 106°, and colicy pains, and died on the 15th. While there the doctor thought it advisable to examine the others and found the pulse 78 to 80, and temp. 106°. No. 2 died yesterday, 17th. When I arrived shortly after noon yesterday, I found No. 3 in a dying condition, pulse 80 and intermittent; temp. 106.8°, lips cracked, breath fœtid, and submaxillary glands enlarged. In each case the limbs were some swollen. The rectum forced out, continuous straining, discharging a serous fluid colored with blood; pain in the bowels. We were both satisfied No. 3 would not live but a few hours, so we had that one destroyed. * * * In No. 2 on post-mortem the larynx and whole length of the trachea were some discolored; remaining organs normal, but a sickening odor came from the body. No. 3 showed similar symptoms. Dr. Burns had three similar cases, about six miles south of this place, in one stable, and all three died after about a week's sickness, presenting the same symptoms."

There were sent in two separate bottles larynx and submaxilary glands, and inferior part of the trachea and bronchi. Also a bottle of the drinking water used. The tissues actively congested, especially the mucosa and submucosa. As Dr. Moore will show, they contained a peculiar microbe of which he maintained a succession of cultures.

Some interesting points may be noted. There is some presumption that the infection followed the water-shed. The first three cases occurred farther south and the flow of the creeks in this district is northward into the lake. For a variable time in each case there was little fever, and upon this supervened a rather extreme hyperthermia, and at the necropsy there was no old lesion, but merely an extreme congestion of the mucosa. The indications were essentially those of bacteridian poisoning or of ptomaine and toxin poisoning which only appeared at an advanced stage, when presumably these poisons had entered the circulation.

A case of the same kind came under my notice in May, 1899. An aged, white, part-Arab mare, at Forest Home, had been ailing for a day or two before I was called. I found her somewhat off her feed, but with a full bright eye, alert motions, erect carriage of the head and ears, and only very slightly accelerated pulse and breathing. In short, she appeared a comparatively healthy horse on cursory examination. The temperature, however, was 106, and the conjunctiva had a deep yellowish-red color approximating to what is usually seen in contagious pneumonia (brust-seuche). There was a slight cough, but no laryngeal tenderness, no distinct crepitus in the lungs, no flatness on percussion, and only a slight exaggeration of the respiratory murmur. The high temperature in the absence of marked lung lesion, or dullness, and the yellow mucosa might have suggested brust-seuche or some other infectious disorder producing poisonous toxins. She was treated with acetanilid 2 drams, sodium salicylate 2½ drams, and potassium iodide 1 dram, given twice daily.

There seemed to be little change for twenty-four hours, but suddenly on the second day, as reported by the owner, the breathing became increasingly difficult, and in a few hours and before I had been notified of the change for the worse, the patient died.

Necropsy was made the following morning in the open air, beside the grave, and revealed a generally petechiated condition of the tissues and especially of the serosæ, where this contrasted strongly with the generally blanched appearance. There was a liquid pleural exudate of a dark red color, and the whole upper half of both lungs showed a deep, violet hæmorrhagic congestion, resembling a dark bloodclot. Pleuritic fibroid thickening and adhesion indicated a former pleurisy from which the patient had recovered. On cutting into the congested portion of the lung it was found to be literally gorged, the blood dripping from the cut surface, and the mucosa and submucosa of the bronchia were of a deep red hue and greatly thickened by extreme congestion. This remarkable congestion of the mucosa extended along the air passages so as to involve the larynx and pharynx.

As both symptoms and lesions pointed to an infective agency, specimens of the exudate, blood and congested lung were taken in sterilized jars to the bacteriological laboratory. In these Dr. Moore found and recognized the same microbe which had been, present in the Monroe Co. cases, and with his cultures the following experiments were conducted.

Experiment No. 1.

A worn-out horse in otherwise fair health was injected in the left lung with 10 c.c. of culture from the microbe from the Forest Home mare. Six hours later the injected animal was dull and stupid, with a temperature of 106, and a yellowish-red tinge of the conjunctiva. There was some acceleration of breathing and pulse, and anorexia, but by the following morning the temperature had fallen to 100, the pulse and breathing were nearly normal and appetite was restored. There was slight crepitus in the seat of inoculation, with tenderness on percussion. The animal was kept for a number of days, but no further decided febrile reaction took place. When killed the chief lesion found was a thickening of the pleura 10 inches in diameter and a large pulmonary nodule with surrounding consolidation of the left lung, in the seat of the inoculation. In this exudate Dr. Moore found, as had been expected, the now familiar microbe of the Monroe Co. cases and the Forest Home mare.

Experiment No. 2.

June 6, a small white mare, which had suffered from detachment of the left hind hoof and had nearly completed the growth of a new one, was at 10 A. M. injected in the left jugular vein with 10 c.c. of a culture from the lung of the Forest Home mare. At 3 P. M. the temperature was 107.8, respiration 52, pulse 58; she was careless of food, perspired under the headstall, and had dark red conjunctiva and pituitary membrane. The temperature of the day was 90 with a high dewpoint and a fresh northwest wind. June 7, temperature 102.3, respiration and circulation quiet, almost normal, and fed well. Temperature of air 89. June 8, 5 P. M., temperature 101, respiration 26, pulse 36. Feeding well.

June 10, pulse and breathing normal; temperature 101. Swelling like a walnut in the seat of the injection. At 12 noon injected in right jugular 14 c.c. of the culture of the Forest Home microbe. At 5 P. M. temperature 105, respiration 15, pulse 66. At 7 P. M. temperature 102.2, at 4 P. M. 101, respiration 6, pulse 42. Is lively and eating well. Has swelling in seat of injection.

June 12, 3 P. M., temperature 102. Injected in left side of thorax 60 c.c. old culture of Forest Home microbe. Just after the injection she had abdomen tucked up, and showing a pleuritic ridge, and she pawed and looked backward toward the left flank. At 5 P. M. the temperature was 106.5, pulse 80, respiration 17, the fæces bore a coating of mucus, the conjunctiva was yellowish-red. At 7 P. M. temperature 105.7.

June 13, 8 A. M., temperature 103.3, at 5 P. M. pulse 82 and irregular in number, pleuritic ridge, insensible loins, crepitus on lower part of the left intercostals, conjunctiva dark orange-red. Took pus from left jugular furrow in Petri dish for examination and found the microbe. At 7 P. M. temperature 105. June 14, temperature 8 A. M., 103.3; 5.45 P. M. 105, pulse 70 and irregular, no respiratory murmur in the lower part of the left lung to a depth of six inches, passes white purulent matter at completion of micturation, loins quite insensible to pinching.

June 15, 8 A. M., temperature 100.8; 5 P. M., 102.2.

June 16, temperature 8 A. M. 101, 5 P. M. 102, 7 P. M. 101.6. Pulse 64, very irregular, percussion on left side of chest causes much pain, eye dark red, nasal mucosa bluish.

June 17, temperature, 7.45 A. M. 100.8, 5.45 P. M. 101.6.

June 18, temperature, 7.45 A. M. 100.8, 5.45 P. M. 102.8.

June 20, temperature, 7.45 A. M. 101.8, 5.45 P. M. 102.2.

June 21, temperature, 7.45 A. M. 100.4, 5.45 P. M. 101.

June 22, temperature, 7.45 A. M. 100.2, 5.45 P. M. 102.

June 23, temperature, 7.45 A. M. 101, 11 A. M. 102.

At 11 A. M. gave by mouth one quart culture of Forest Home microbe.

June 24, temperature, 7 A. M. 103, 3.15 P. M. 101.5.

June 25, temperature, 7 A. M. 100.5, 3.15 P. M. 101.2.
June 26, temperature, 7 A. M. 100.5, 3.15 P. M. 101.8.
June 27, temperature, 7 A. M. 100, 3.15 P. M. 102.
June 28, temperature, 7 A. M. 100.7, 3.15 P. M. 102.4.
June 29, temperature, 7 A. M. 101.2, 3.15 P. M. 101.5.
June 30, temperature, 7 A. M. 100, 3.15 P. M. 100.8.
July 1, temperature, 7 A. M. 100.6, 3.15. P. M. 100.8.
July 5, temperature, 5 P. M. 100.

NECROPSY.

July 17 (41 days after the first inoculation, and twenty-three days after the infectious culture given by the stomach) subject killed. There was still some suppuration in the left hind foot and a large ringbone which preceded the loss of the hoof. General condition good.

Firm old standing adhesion of the left lung to the ribs from the sixth to the fourteenth and vertically from above the seat of the inoculation to the sternum. Separation laid bare a large suppurating cavity, irregular in outline and encroaching on the surface layers of the lung. There was at least three-quarters of a pint of exudate of a pinkish-brown color in the pleural cavity. This coagulated on exposure. At intervals on the pulmonic pleura and on the mediastinal covering of the free margin of the cardiac auricles there was more or less exudate into the connective tissue.

The right pleural sac was the seat of old standing neoplasms, forming nearly circular elevated white patches on the surface of the lung, but with no adhesions to the ribs.

Petechiæ existed at intervals on the pleura and pericardium. The tracheal and bronchial mucosæ and the submucous tissue were free from the dark hæmorrhagic congestion which characterized the Forest Home case, from which the microbe was taken. At the seat of the injection into the jugulars there remained some thickening of the subcutaneous tissue, but no pathological formation was found on the serosa of the vessels.

REMARKS.

Without venturing to encroach on the pathological and bacteriological results which will be dealt with by Dr. Moore, I may gather one or two of the lessons to be learned from this series of cases.

First. We have a succession of cases of acute febrile disease in the horse due to a bacteridian infection, and manifested by an extreme and often fatal congestion of the lower respiratory mucous membrane and lungs (possibly also of the other organs in special cases).

Second. In the casual (Monroe Co.) cases there was a preliminary stage in which the fever was scarcely marked, followed by a period of extreme hyperthermia (106°), and there was great danger of a speedily fatal result. The illness in a mild form extended over about five days, whereas after the appearance of the hyperthermia the animal did not survive two or at most three days more. The Forest Home case was not seen until the hyperthermia had appeared, but she died within forty-eight hours thereafter. Our two inoculated cases did not die during the hyperthermia, but they showed this reaction in a very marked form, whether the virus was introduced into the blood, or the lung and pleura. In these the maximum temperature was probably reached by the fifth or sixth hour after injection, and it had returned to near the normal in twelve to twenty-four hours. In the thoracic inoculation 106.5° was reached in two hours, and as an afternoon temperature, 105° was maintained for two days. Then comparative defervescence ensued. The low morning and high eveuing temperature were no less remarkable.

The small amount injected into the veins (10 c.c. and 14 c.c.) forbids the idea that hyperthermia resulted from the mere addition of liquid to the circulating fluid, and this was corroborated by the high temperature which was more promptly secured by the inoculation into the chest. The enormous dose administered by the mouth produced a more moderate and tardy febrile reaction than the smaller doses inoculated. This might be partly explained on the ground that the system had already become

partially immune by reason of the repeated doses, but also by the destructive action of the gastric and hepatic products on the toxins.

In the microbe before us we have the example of an infection which may by its unaided action bring about a speedily fatal disorder of the respiratory organs; or, which lodged in the tissues which are already the seat of inflammatory or other morbid action, may speedily transform a comparatively benign disorder into an almost certainly lethal one. It is a type of other infections, which, complicating a simple and comparatively harmless disorder, may introduce a most dangerous element. More light is wanted as to other elements of this kind, and the present observations are brought forward as a contribution to the knowledge of a class which it may be hoped will help to place medicine nearer than before to taking her place among exact sciences. An encouraging feature of the present infection is that, however dangerous in their attack, its toxic products appear to be early modified or eliminated, so that, if the subject survives two days of extreme hyperthermia, there is a good prospect of recovery.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

AN INTERESTING CASE.

By W. H. DERR, V. S., Mansfield, Ohio.

On September 26, 1899, Mr. Ed. Ford, groceryman, drove a bay horse, six years old, 15-2 hands high, to my office, and told me he seemed sluggish and drowsy, not driving with his usual freedom. Everything seemed normal, except eyelids, which were droopy, and his front legs were slightly swollen below the knees. I supposed his liver and lymphatics needed toning up, as he was being fed quite heavily. I gave a cathartic, and advised light diet for a few days. The physic operated very well, and in two days he was placed under Fowler's solution and nux vomica twice daily.

In a few days he was again brought to the office, and showed no improvement. October 1 I was called to see him. Appetite good, pulse 36, temperature 100° F., bowels regular and of good color, legs swollen to midway between knee and elbow, the swelling having the characteristic abrupt ending of purpura; hind limbs and sheath normal.

I suspected scarlatina, but there were no symptoms except the swelling, with a mild sore throat. I placed him under absorbents and stimulated the kidneys.

On October 4 I was hurriedly called to see the patient. Not being in at the time, I did not see him for an hour after the telephone message. I found the patient with a temperature of 101½°, pulse 40, sweating profusely, tossing head and showing general symptoms of abdominal pain, with considerable tremor of the muscular system. Fifteen minutes before the attack he had drank moderately of cold water from trough, being previously used to water with the chill off, and I attributed the suffering to the cold water.

I found on examination that the breast was enormously swollen as far up as the neck, particularly between the front legs and in front of the breast, with very prominent enlargement showing plainly in the location of the thymus gland on each side of the trachea, protruding larger than a base-ball, with no heat nor tenderness to the touch.

A few minutes after calling he began to eat his hay, and in twenty minutes was entirely quiet, dried off and ready for his supper.

He continued in the same condition, except that the swelling extended under the belly, two-thirds of the way back to the sheath. In all his sickness, his hind legs and sheath remained normal.

I then gave him mild heart stimulants, absorbents and diuretics, with light diet of oats and bran and good hay. His spirits remained good, but he had some difficulty in moving on account of the swelling. He continued with some abatement of the swelling until the 9th, when he was turned into the yard. He enjoyed it, and walked about and ate quite freely of grass. In twenty minutes he had another attack, sweating freely, pawing, tossing head, and tremors. In thirty minutes he was again quiet, without the use of anodynes. The swelling seemed reduced, but the enlargement at seat of the glands was more prominent. He was then left in his box until the 13th, with, I thought, improvement.

On the 13th he was exercised a very little and tied in the sun for two or three hours. On the morning of the 14th he was again exercised, being given a little more walk than on the 13th. When two blocks from home he was again taken with an attack and was taken home with difficulty, and had a repetition of the other attacks. In twenty minutes he was again all right, but his appetite was not so good. He would start at his food ravenously, but leave a part of two quarts of oats. Swelling about the same, temperature 100°, pulse 40. On the evenings of 14th, 15th and 16th, at 6 o'clock, nearly to the minute, he had an attack of pain lasting about twenty minutes. From 14th to 16th appetite grew less, circulation a trifle faster, eyes more droopy, death taking place at 6.20 P. M. of 16th. After a severe attack he reared up and fell dead without a struggle.

Circumstances, much to my regret, prevented a post-mortem, which might or might not have revealed the cause, but I am at a loss to understand the case unless my diagnosis of incipient purpura was correct, and then many symptoms remain unexplained.

During his sickness there was no irregularity of the heart-beats, no distressed breathing, no constitutional symptoms except swelling and attacks of pain, each of which, up to two days before death, was preceded by exercise of greater or less extent.

If the editor or any of my professional brothers can give any information on this case from my meagre description, either personally or through the pages of the REVIEW, they will bestow a great favor on me.

What caused the severe attacks of pain, and what caused death?

THE USE OF CHLOROZONE IN PUNCTURED WOUNDS.

By E. R. FORBES, V. S., Pensacola, Fla.

Case No. I.—There were two deeply punctured wounds of the femoral region in a horse; they were three inches apart, 6 and 4 inches deep respectively. They were treated by cold-water irrigations, followed by chlorozone (1 to 6 of water), and iodoform gauze packing. The packing was discontinued after the third day, as it fretted the patient too much and the chlorozone appeared to be sufficient. Rapid recovery. In our climate punctured wounds in this region are very dangerous, owing to phlegmonous inflammation, followed quickly by mortification and death. In these two cases there was absolutely no inflam-

matory action, which I believe was due solely to chlorozone.

Case No. II.—Punctured wound in groin, six inches deep. Treatment: Cold-water irrigation and chlorozone. No inflammatory action and rapid recovery.

Having been always a strong advocate of antisepsis, and having used every antiseptic introduced in the last twenty years, I must say that as far as I have used chlorozone it has given me the best results.

SCHMIDT'S TREATMENT LITTLE SHORT OF SPECIFIC.

By G. R. STEWART, V. S., Calumet, Mich.

I have given Schmidt's treatment for milk fever a very good trial, and find it to be almost a specific. The last case I had the pleasure of trying the treatment on was a Galloway cow, extra fat, and had given birth to several calves previous to this one and was never affected before. This cow gave birth to a fine big calf on Tuesday night. Wednesday morning the owner noticed her staggering and immediately sent for me. On my arrival found her still on her feet, but very unsteady and apparently did not notice anything, not even the calf, which was in a stall beside her. I ordered calf to be taken away, as the stable was very small; also the partitions torn down and a good bed of straw made for her. I then gave her an injection of 150 grs. of potassium iodide and left, telling the owner to leave her alone, and that she would go down and be unable to rise in a short time; but not to be alarmed at that, as it is a natural consequence of the disease. Six hours later I called and found her down, head around to side, pupils dilated. Gave her another injection of 130 grs. At the same time the owner and his neighbors, thought it very foolish on my part to try to do anything with her, as they said when a cow has milk fever they never get better, and that she was a very bad case, which was the truth. I had to give her five injections before she got on her feet. She was down about 50 hours. You may imagine what a wonderful "cow doctor" I was when that cow got up.

This cow lost about 200 pounds of flesh, the epidermis peeling off all over the body; the milk was very thick and of a curdled nature for about two weeks, at which time it resumed its normal condition. The cow is doing finely, and the owner and his neighbors are quite enthusiastic over the new treatment.

I could relate many other good results from the new treatment.

EXTRACTS FROM EXCHANGES.

BELGIAN REVIEW.

FOREIGN BODIES IN A HORSE AND IN A COW [*By Prof. Hendrickx*].—As the author remarks, how strange foreign bodies sometimes behave when once introduced in the organism of an animal. As a proof, read the two cases that he records: (1) A four-and-a-half-year-old horse was brought to him for a small wound a little below and in front of the right scapulo-humeral joint. Much pus was discharged and the leg had to be cleaned several times a day. The history of the animal was simple:—Four years before, when a colt, he was found one day very lame; he had only a little scratch in front of the shoulder; he was treated and the lameness disappeared, yet the discharge kept up. When two years old he was broken to work and since has been working, free from lameness and still discharging. The wound was probed with difficulty and found running upwards towards the withers. The animal was cast and at the point where the probe seemed to end, an incision was made. It was 8 or 10 centimeters deep; at its bottom the continuation of the fistula was found and at last the bottom reached, from which a piece of a walking stick was extracted. It was one inch in diameter and twenty-one centimeters long. It had traveled 38 or 40 centimeters from its place of entrance, below the shoulder joint. The animal kept it four years in his muscles without apparent trouble, not even the slightest disturbance in locomotion. (2) A cow, coming back from the field, seemed ailing. She groaned, refused her food, had colic and tympanites. She was bled at the jugular, fed on low diet for 24 hours, and then appeared in perfect health. Three days after a swelling as big as a hen's egg showed itself between the second and third lumbar vertebræ and in its centre a little black point was felt. It was taken hold with forceps and a rib of an umbrella sixty-one centimeters long was extracted. This rib was perfectly straight and it is a question how as such it was possible for the cow to swallow it and be sick only for a few hours afterwards. —(*Annales de Bruxelles.*)

OVARIOTOMY WITH ELASTIC LIGATURE.—Several months ago an article appeared in the *Annales de Bruxelles*, a translation by Prof. Hendrickx of a paper published by a Swiss veterinarian (Mr. Bertschy), in which are several practical observations on ovariotomy. The author recommended the application

of a ligature as a means of castration, with or without amputation of the ovaries. An elastic band was then recommended. Director Degivé, who at that time had fully indorsed the new method, said that it was called one day to take the place of all means heretofore patronized for the castration of our large domestic females, mares and cows. Since then Director Degivé has had occasion to apply the elastic ligature in his practice, also other veterinarians, and success has always followed the operation. The elastic ring used is secured tight by means of a little glass bulb or pearl, which is perforated. Through the ring the elastic band is passed. It then forms a little loop, through which a double sliding cord is introduced, and while this hangs out of the vulva, by pulling upon it the thickness of the ring is reduced, the glass ball can be pushed nearer the soft tissues, the ring is made tighter on them. When the cord is enlarged the elastic band resumes its thickness in front and below the glass ball, which is left in place holding tight. The process is said to be simple in its application and entirely free from danger, with the simplest application of antisepsy.

A Case of Lingual and Labial Psorospermosis in the Horse [*By MM. Hendrickx and Lienaux*].—This affection is quite rare in the horse, although it is frequent in swine and in ruminants. Nedamysolzky has found them in the cervical muscles, diaphragm, œsophagus, walls of the pharynx and some muscles of the extremities. Schulz has met them in the muscles of a horse paralyzed in the fore legs. The authors have seen them in the tongue and the upper lip of a four-year old, which presented the following symptoms: superior lip trebled in size and stiff. Its internal face is roughened, covered with small nodosities; it has a grey-yellowish tint. The mouth is partly closed and saliva escapes from both commissures. The free portion of the tongue is four times its size and overfills the lingual canal. Its consistency is much altered. It is hard like condensed fibrous tissue; the movements of the organ are nearly normal when made from forward backwards; lateral ones are more difficult. The surface of the organ, instead of being smooth and soft, is bosselated, rough and presents numerous little nodosities. Here and there are superficial solutions of continuity, traumatisms inflicted by the teeth probably. The animal is otherwise in normal condition except thin. Microscopic examinations excluded actinomycosis, tuberculosis and botryomycosis, but revealed the presence of a large collection of sacroporids which infected the whole organ. A treatment of

iodide of potassium was recommended, and recovery gradually took place by degrees and was soon able to take hold of his food and return to work.—(*Annales de Bruxelles.*)

SPANISH REVIEW.

EXOSTOSIS OF THE SCAPULA [*By Luis Nunez*].—At the abattoir a nine-year-old steer was slaughtered; he presented a large tumor of the right scapula, quite sharp at its superior part and about ready to ulcerate through the skin. Notwithstanding its size the tumor did not interfere with locomotion, and the animal was in good condition. There was no indication of actinomycosis. At the post-mortem a large exostosis was found, sequel of an incompleted fracture of the acromion spine. Relieved of all surrounding soft tissues, the bone weighed 9 pounds (4 kilos and 750 grammes).—(*Rev. Veterin.*)

LAMENESS DUE TO CYSTICERCI [*By Martin Ciga*].—A three-year-old bull became lame on the left fore leg without apparent cause. The lameness seemed to be located in the upper part of the leg. Rheumatism was suspected and the animal treated accordingly and recovered. Some eight months later the trouble reappeared, but was more severe, and this time on the right leg. There was a swelling on the fore arm, indicating the seat of the lesion. The same diagnosis was made and the same treatment prescribed. But instead of improving, as in the first attack, the lameness increased, the swelling became more prominent, and then parasitic origin was suspected. The animal was in good condition; he was incurable, and was sent to the slaughter-house. The thoracic and abdominal organs were sound; but cuts made through the thickness of the muscles revealed the presence of numerous cysticerci, reddish in color and scarcely as big as the head of a pin. Those were found also in the muscles of the shoulder, the intercostals and the abdominal walls. The author believes them masses of cysticercus semmicolis-.—(*Rev. Veterin.*)

SOME POISONOUS PLANTS.*

RATTLE-BOX.

Crotalaria Sagittilis L. Other Names: Rattleweed; Wild Pea. Fig. (10)

Description and Where Found.—A hairy annual, 3 to 18

* Abstracted from *Farmers' Bulletin* No. 86, U. S. Dept. of Agriculture, by W. J. Martin, M. D. C., Kankakee, Ill.

inches high, with simple undivided leaves, 1 to 2 inches long, and small, yellow pea-like flowers appearing in July. The seed-pods are about an inch in length when mature, and are nearly black. They are much inflated, and as the walls are stiff and thin and very resonant, they make excellent miniature rattles when the seeds have become detached from their fastenings inside of the pod. The rattle-box is native in low, sandy soils from the Atlantic westward to Minnesota and eastern Kansas; also in New Mexico. It is common in Connecticut, New Jersey and North Carolina, and in some years is very abundant in bottom lands along the valley of the Missouri, in South Dakota and Iowa.

Poisonous Character.—The poisonous constituent unknown, but it resides both in the leaves and in the seeds. Horses, and sometimes cattle, are killed by eating grass or meadow hay mixed with the plant. They are not poisoned so often by eating the plant in the field. Public attention was first called to the poisonous nature of rattle-box by Dr. Stalker, of Iowa, who, in 1884, while investigating the cause of "bottom disease," then prevalent among the horses of Iowa, was led to believe that it was mostly if not altogether attributable to this plant. Experiments were made which proved the supposition to be correct.

Symptoms.—As generally described from accidental cases, the symptoms are much prolonged, death resulting only after several weeks or months. There is a general decline of vigor, and a gradual loss of flesh, as observed in the case of loco, with which this plant is closely related. The rattle-box does not, however, appear so often to produce the craziness characteristic of loco.

The percentage of rattle-box in meadow hay will be much reduced if the fields are burned over when the seeds mature the preceding summer. The growth of perennial grasses will not be materially affected thereby.

DWARF LARKSPUR.

Delphinium Tricome Mich. Other Name: Staggerweed (Ohio). Fig. (6.)

Description.—The genus delphinium, formed by the larkspur, is composed of erect herbs, with palmately lobed leaves, and an elongated cluster of showy flowers. These are commonly blue, and are further characterized by the absence of green parts, and the presence of a peculiar spur-like appendage.

There are over 25 species native to the United States. Few have a very wide distribution, but some of the western species are extremely abundant in their natural place of growth. They have a general reputation of being poisonous to cattle.

The dwarf larkspur is a smooth, simple-stemmed perennial, 6 to 12 inches high, with a tuberous root, deeply five-parted leaves, and a long, loose cluster of blue (sometimes white) flowers, which appear in April and May. It grows in clayey soil and open woods, from Pennsylvania and the mountains of North Carolina to Southern Minnesota. It is especially reported from Ohio as fatal to cattle in April, when the fresh leaves appear.

WYOMING LARKSPUR.

Delphinium geyeri Greene. Other Name: Poison-weed.

Description and Where Found.—A somewhat hairy perennial, 10 to 20 inches high, with a large spheroidal tuft of rather thick, dull-green leaves, and a central column of deep azure-blue flowers. A common high prairie plant of Wyoming and Northern Colorado. It is reported to be most troublesome of the poisonous plants of Wyoming. Ranchmen suffer considerable loss from it, especially in early spring, when the dark-green tufts of foliage are conspicuous features of the otherwise dry and barren landscape.

PURPLE LARKSPUR.

Delphinium Menziesii D. C.

Description and Where Found.—A somewhat hairy, tuberous-rooted perennial, about a foot high, with a basal cluster of finely divided, long-stemmed leaves, and a single column of showy flowers, which appear at any time between April and July. The flowers are few in number, but are extra large, being from 1 to 1½ inches broad. This species is found native on hillsides from the vicinity of San Francisco to British Columbia and eastward as far as South Dakota. In Montana it is very common.

Poisonous Character.—The percentage of fatal cases in cattle which have eaten this and other larkspurs is said to be small. A rough estimate by a eattleman places it at about 20 per cent. for one species of the group, when the animals are not properly treated, and 5 per cent. otherwise. This is probably a low estimate, however, for in a case of poisoning from D. Menziesii that occurred in Montana in May, 1897, and was reported by Dr. E. V. Wilcox, nearly 600 head of sheep were affected, 250 of which died.*

* Since the above was in press, Dr. S. B. Nelson, professor of Veterinary Science in the Washington State Agricultural College, has published (Bull. No. 22, Bureau of Animal Industry, U. S. Dept. of Agriculture) the results of an experiment made by himself, in which as much as 24¾ pounds of the fresh leaves of this plant were fed to a sheep within a period of five days without any apparent ill effects. An experiment made by Dr. Wilcox (Bull. No. 15, Montana Agricultural Experiment Station), shows that the extract from less than an ounce of the dried leaves killed a yearling lamb in two hours, the dose having been given by the mouth.

It is an excellent precaution to allow animals in pastures containing larkspur only when well fed, and then only for short periods, until they become thoroughly familiar with the deleterious nature of the plants.

The tall mountain larkspur (*Delphinium trolliifolium*), sometimes known as cow poison, grows in moist, shady places from Monterey, Cal., to British Columbia. Reports of poisoning come from California and Oregon. The poisonous qualities of this species have, however, been considerably questioned.

A lavender-colored, fleshy larkspur (*Delphinium recurvatum*), which grows in moist saline soils south of San Francisco and Stockton, in California, is particularly reported as fatal to animals in San Luis Obispo county. The seeds of the European stavesacre (*Delphinium staphisagria*) has long been regarded as a powerful poison. The seeds of the commonly introduced larkspur (*D. consolida*) is regarded as less poisonous; the leaf is reputed to be poisonous to cattle in Europe. The leaf of the stavesacre has only recently been shown to be poisonous. The properties of the roots of these and other species are not well known. Little or no attention has as yet been paid by American chemists to the native larkspur, hence it is not known how poisonous they are in comparison with the European species.

DR. LIAUTARD AND THE LOVING CUP.

It was the intention of the junior editor of the REVIEW to have published the accompanying illustrations in connection with the report of the presentation of the loving cup to Dr. Liautard by the Alumni Association of the American Veterinary College on the occasion of its twenty-fifth anniversary, which was celebrated by a banquet at the Manhattan Hotel, New York City, Sept. 5th. A satisfactory photo of the cup could not, however, be obtained, until Dr. Robert W. Ellis, the temporary custodian of the trophy, exerted his talents in that direction. Dr. Ellis' letter of transmissal explains itself so well that it is herewith given in full.

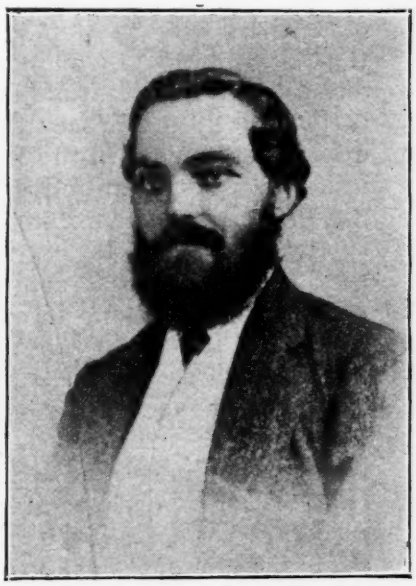
NEW YORK, November 20, 1899.

Dear Dr. Bell:

I send you by this mail a photograph of the cup presented to our dear old Dean, and pioneer of our profession in America, Prof. Liautard, at our last alumni dinner and silver anniversary of the American Veterinary College, by his boys, the Alumnæ. This family of boys is so

large, that I fear many of them could not be present to take an active part in that celebration, and witness the presentation of this token of love and esteem, and appreciation of a quarter of a century's work *well done;* and so I have sent you this photograph showing one of the three sides of the cup containing an engraving of his face, for reproduction in the REVIEW, that it may reach all the boys, and trust that it is good enough to reproduce, being my own work, and decidedly amateur, and amateur work on silver cups, with the object of reproducing an engraving thereon, is not "a cinch." The other two sides, you can describe in your own well selected language.

Yours very truly,
ROBERT W. ELLIS.



At the great "Jubilee" there were many faces which are seen only at long intervals: class-mates who had not looked upon each other since the proud night that they had marched across the stage of Chickering Hall and received from President Weisse the roll of parchment as a reward of long hours of patient and hard study, and who now greeted each other with almost the enthusiasm of old lovers, joyfully going over the events of their college life and telling the story of their successes and failures after embarking upon the realities of the practice of their art. By one of such, Don C. Ayer, of the class of '87, now the chief of the great meat inspection force at Omaha, we were shown a photograph of the Dean, taken soon after he landed in America, in the early sixties, and, by promis-

ing to preserve it very carefully and return it unsoiled, we are enabled to present this to our readers—only a few of whom will be able to remember the subject as he appears in this likeness.

BIBLIOGRAPHY.

THE DISEASES OF POULTRY. By D. E. Salmon, D.V.M., Chief of the United States Bureau of Animal Industry. Washington, D. C.: George E. Howard & Co.

Comparative medicine is already under many compliments to the studious and scholarly head of the Bureau of Animal Industry, and it is again made his debtor by this latest contribution to a subject to which he has given a great deal of thought, and to which the vast majority of veterinarians have given so little. So light has been the literature upon the subject of the diseases of poultry in the English language that the small volume under consideration is the first that has been written, and for this reason it becomes of greater value as occupying exclusively this field. In his introduction the author gives some idea of the immense commercial importance of birds in this country by furnishing from the last census the statement that there were in 1890, 258,871,125 chickens or dung-hill fowls and 26,738,315 other domesticated fowls, while the earnings of American poultry have been estimated from $200,000,000 to $350,000,000. In this chapter are also considered health and disease, the organs and apparatus and their functions, common causes of disease, hygienic requirements, disinfection, objects of medical treatment, etc. Chapter II deals with diseases of the respiratory organs; chapter III and IV, those of the digestive apparatus; V, diseases of the peritoneum, liver and spleen; VI, diseases of the organs of urination and reproduction; VII, the brain; VIII, heart and blood vessels; IX, parasites and diseases of the skin; X, feet and legs; XI, infectious diseases; XII, injurious habits or vices. The book is profusely illustrated, well printed on good paper, handsomely and substantially bound in cloth or paper, and sells for the nominal sum of 50 cents for the paper binding and $1 for cloth binding.

PROCEEDINGS OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION; Session of 1899. Edited by the Publication Committee, W. L. Williams, Chairman, Ithaca, N. Y. Published by the Association.

Promptly on time came the report of the "Proceedings" of the New York meeting, bound in cloth, beautifully printed on good paper, well arranged, well edited, and containing over 300

pages, with some new features, and perfectly indexed. Although the two most active members of the Publication Committee were *hors de combat* during the latter part of the session, they lost no time in getting down to work when they reached home, and we extend our congratulations to them and the Association on the creditable presentation of the interesting proceedings and valuable papers, many of which could not for lack of time be read and discussed, and appear in this volume for the first time, and form an invaluable addition to American veterinary literature.

The volume contains the constitution and by-laws of the Association, a new departure, and an excellent one, placing in compact and convenient form for reference this important instrument.

CORRESPONDENCE.

THE FUTURE OF THE VETERINARY SERVICE IN THE U. S. ARMY.

MAYAGUEZ, Porto Rico, Nov. 1, 1899.

Editors American Veterinary Review:

DEAR SIRS:—The future of the veterinary service in the army is one that has a most absorbing interest for the profession at large, and a peculiarly absorbing one for those of us who are connected directly with the service at present. Are we satisfied with the existing condition of affairs; are there no future steps to be taken, and has the recent improvement in the status of ten of the army positions improved the service to such an extent that there is no room left for improvement? Will the bettering of the condition of half of the present army force have any bearing on the welfare of the cavalry horse, and will the functions of the veterinarian be performed with more benefit to the service, working as he is without organization and without a governing and guiding mind? These are questions that will not down, and must be solved before any real and satisfactory results are obtained, and before the service can receive the improvement that it is entitled to under the recent partial reorganization.

We are all well aware that now there is no system of any kind in the administration of the duty of the veterinarian, no data of any kind preserved except that depending upon the taste or inclination of the individual, and it is needless to say that

these are useless from an official standpoint, noted as they are without system and without supervision of any kind.

Diseases may creep in, unsanitary conditions may exist, methods of meat and other food inspection may be unscientific, unsystematic and even perfunctory, without anyone to demand an explanation. There is no rule laid down for the veterinarian's guidance, and not even the shadow of a report made whereby the faithful, or otherwise, performance of the individual may be judged. It is true that the veterinarian is under military discipline, and that his commanding officer can and will call him to account if negligent, but is this sufficient—is it all that is desired? This supervision of the commanding officer would be important if he were a veterinarian himself, and it is all sufficient where the military administration is concerned, for under these conditions the commanding officer knows his business exactly and is a competent judge, while ordinarily his knowledge of veteriuary medicine is not much more than superficial.

The authorities could remedy the present lack of system and haphazard manner of doing things in the veterinary service by appointing one of its veterinarians to supervise and direct the rest, but he in all probability would be a man ignorant of the customs of the service, more of a civilian than of a soldier, and would as a consequence be the unconscious cause of continual misunderstandings until experience (which he would have to gain with the colors) expanded his mind and showed him that he was not "the whole thing." Even should he be a man with military experience his position would certainly lack the necessary weight that rank alone bestows even in our own democratic army.

To derive the best results from the improvement in the veterinary service and to place that service on a basis where it can and will demonstrate that its work is well and thoroughly performed, where the result of this work may be of lasting benefit both to the service and to veterinary science it should have a competent head, and in this connection I would like above all others to mention the name of Dr. Rush S. Huidekoper, as a gentleman of long army experience, splendid administrative abilities, a scientist, a medical man, and certainly a veterinarian of the first order. With this gentleman at the head of affairs, with a suitable rank (major), and with the rank allowed to those who have already passed the examination, there is no doubt that results would be attained of a lasting scientific and

pecuniary character. It may be objected that there are others as well qualified for the position as Dr. Huidekoper, but it is more than doubtful, for with his training as a scientist, a veterinarian and a military man, he is peculiarly fitted for the position.

I may not have gone into the details of this matter sufficiently to point out the necessity for an organized service; suffice it to say that unorganized efforts are invariably abortive of good results, and that detailed criticism of affairs in the service would be out of place on my part. Veterinarians outside as well as in the service should endeavor to impress upon the coming Congress the importance of an organized veterinary service in the army, with a competent head, and those of us who have taken the examination should have the rank as well as the "pay and allowances" of a lieutenant of cavalry.

It is not because that some success has been attained by those who have labored for the advancement of the veterinary service in the army that efforts should be relaxed; on the contrary, every muscle should be strained and every fair means adopted to establish the service with a head that will put it on a systematic working basis. The cavalry now is existing under new conditions; animals as well as men are exposed to new and unaccustomed dangers; contagious disease is more prevalent in warm climates, and those animals under our care need more constant and more intelligent attention; food is more liable to change and deterioration in tropical climes, and the intelligence and accurate knowledge of the veterinarian more often called into play along these lines in our new possessions, and under conditions such as these there should be no doubt as to the necessity for organized action in meeting and surmounting the new problems that are daily presenting themselves, and without this organization I do not fear to say that the veterinary service of the army might just as well be allowed to remain as it was.

GERALD E. GRIFFIN,
Veterinarian, 1st Class, 5th Cavalry.

SOCIETY MEETINGS.

MISSOURI VALLEY VETERINARY MEDICAL ASSOCIATION.

The meeting convened at the Kansas City Veterinary College on Monday evening, October 23, with the following members

and visitors present: Members—Drs. Linscott, Ernst, Wright, Kaupp, Brown, Milnes, Versheldon, Cock, Stewart, Buckley, Netherton, Moore, Bennett, Sloan, Biart, Patterson, and Kelly. Visitors — Drs. Metsker, Neal, Allen, Cooper, Steel, Boyce, Groves, Nixon, Black, and about 30 students.

An interesting and instructive clinic was held at the College, 1404 Holmes Street, and the following operations were successfully performed: Ovariotomy per vagina by Dr. H. G. Patterson; ovariotomy per flank by Dr. W. N. Nixon; peroneal tenotomy by Dr. R. C. Moore; neurectomy by Dr. J. B. Black; aretynoideraphy and median neurectomy by Dr. R. C. Moore.

Owing to the absence of the President and Vice-Presidents, Dr. John Ernst, of Leavenworth, was elected President *pro tempore.*

There being no business, the association proceeded to the consideration of papers.

Dr. J. B. Wright presented the first paper, on "Actinomycosis," as follows:

ACTINOMYCOSIS

is an infectious disease and due to the entrance into the tissues of a vegetable parasite named the actinomyces. It is characterized by the presence of suppuration and inflammatory new formations in various tissues. It has been seen in the pig, ox, horse, sheep, and also in man, but it attacks bovines by preference. For a long time this disease has been described under the name of osteosarcoma or tumors of the jaws, due, as was supposed, to the action of various kinds, such as a kick or prod with the horn. Some authors described this disease as of a cancerous or tuberculous nature. Later these facts were dispelled by Perriconti and Revolta when they discovered in these tumors the presence of a parasite divided into short filaments and club-like in shape. About two years later Bollinger began his first researches on these tumors on the jaws of the ox, and demonstrated a cauliflower-like parasite, which the botanist, Hartz, after a great deal of study, named the actinomyces. Since then we have the name actinomycosis. Since that time numerous observations have been made and we find Nocard recognizes this disease for the first time in 1884. We are told that the same alterations are met with in other tissues of the body. Since Nocard's investigations numerous observations have been made in the study of actinomyces on the varions animals affected. Actinomyces belong to the vegetable king-

dom and are sometimes known as the ray fungus. It is common on all grasses, but seems to have a preference for the barley straw. On microscopical examination we find they present themselves in yellowish masses, club-like in shape, and seem to form in groups and forming almost a perfect rosette, the splindex or tail interlocking with one another. In certain tumors these enlargements are absent; the actinomyces are here represented by a mass of ramified mycelium. These fungi often undergo calcification. The actinomyces are colored by the methods of Cram and of Weigart. The cultures are obtained in the presence and in the absence of air. Actinomyces can be developed in different mediums. Glycerine, serum, and also on potato culture. They develop in rounded colonies in pale white masses which afterward become yellowish or reddish. Inoculation transmits with difficulty the infection to the calf, rabbit and guinea-pig. Temperature favorable for the development of the culture is between 32 and 37 centimetres. Cultures killed in 10 minutes at zero.

How does infection take place? The actinomyces may invade the animal economy in various ways, but principally through inoculation coming in contact with wounds in the mouth, diseased teeth, etc. Infection may also take place through the respiratory tract and through wounds of the skin. Generalized actinomycosis may take place through the circulation. Adult bovines are the animals particularly affected, although the disease attacks the horse, pig, sheep and man. The affection is very rare in the horse and sheep. We also find it in the deer. The disease has been for a long time known in Europe, under different names for the regions affected, but with the same clinical study; for instance, in England we find it under the name of "woody tongue," where the tongue is affected, and "lumpy jaw" where the head and neck are affected. We also find in Europe and this country an epizootic cancer of the tongue similar to actinomycosis. The numerous works written on actinomycosis show that the disease can be reproduced in the old and new continent with a very irregular development of the different localizations, such as the jaw, tongue, pharynx, etc., but I must say a preponderance of statistics show that the maxillary bones of the head of the ox are the places principally affected and observed. From my personal observations I am inclined to believe that localizations of the lungs and viscera are almost exceptional, although it has been currently reported by several authors.

Quoting from Quill's translation, I notice that of 105 cases the maxillary bones were affected in 51 per cent., the tongue 29 per cent., the larynx and trachea 6 per cent. In France and Germany the maxillæ bones were the most observed. In Italy all the clinical forms are met with. In the county of Norfolk, England, 8 per cent. of the cattle affected localizations were on the jaws and tongue (Cruikshank). In Russia the disease abounds in all centres and in certain regions. In this country actinomycosis abounds to a high degree. Hundreds of cattle are condemned yearly in the different markets; 3 per cent. of the cattle shipped from Canada to England show the lesions.

From the foregoing the question arises how are we to study the different anatomical alterations?

(1) In Bovines. Actinomycosis of the jaws. The localizations on the jaws correspond to tumors; this is the most commonly observed. The disease appears as an inflammatory swelling which first begins somewhere along the lower or upper jaw or on the side of the face. It is often accompanied by a sensibility of the region and difficulty in mastication. It grows slowly and takes quite a long time before it reaches any size. Abscesses which open to the exterior emit a creamy, thick, doughy-like pus mixed with small yellowish grains. Put a probe into the orifice and we will discern a regular fistulous tract, separated by soft tissues. One peculiar aspect of this disease is the fact that the pus has no odor and will come away in strings. The teeth become loose, mastication is slow and one-sided; these fistulous openings are surrounded by black granulations, sometimes attaining the size of a cocoannt; the animal becomes emaciated; grave functional troubles arise, and unless killed, will succumb.

(2) Actinomycosis of the tongue. First symptoms consist of the difficulty of the animal in prehension, mastication is slow and incomplete, the tongue cannot be extended from the mouth, it is tumefied and painful, and an abundant salivation. At this stage we find the tongue hard, rigid and voluminous (here we get the name "woody tongue"), and showing all over little knots of a yellowish color from the size of a pea to a goose egg, embedded in the mucous membrane. Here we observe the appetite is failing, the animal becomes emaciated, the disease is rapid and at the expiration of a few weeks the animal succumbs to inanition, if not sacrificed.

(3) Actinomycosis of the pharynx. The disease in this region is discovered by direct exploration of the mouth. These

tumors when found are fibrous in consistence and are from the size of a pea to a nut. These tumors generally entail a difficulty of deglutition and respiration, and are sometimes accompanied by a cough. We often find on exploration tumors of the adjacent glands; owing to the difficulty of swallowing and painful respiration the animal emaciates rapidly and ought to be killed.

(4) Actinomycosis of the neck. Symptoms vary according to the seat of the regions involved. Sometimes we find the lesions are seated in the superior part of the shoulder or under the skin, the walls of the pharynx, œsophagus, glands, etc. In all cases there exists a diffuse tumefaction which little by little becomes hard, painful knots which finally discharge a thick, creamy, yellowish looking pus rich in actinomycees; if not relieved the cavity cicatrizes slowly and with great difficulty, the suppuration penetrates more deeply, fistulous tracts are formed, connecting different regions, the skin thickens to three times its natural size, surrounded by soft tissue which suppurates and discharges pus rich in actinomycotic grains. Outside of the lesions in the jaws, tongue, pharynx, we may find actinomycosis in any of the glands or other tissues of the body. On the lips actinomycosis may be confounded with apthous in calves. The tumors appear under the mucous membrane from the size of a pea to that of a nut. They consist of a caseous purulent centre with fluctuating points and on squeezing will be found to contain actinomycotic grains.

In the respiratory passages we find the tumors infest the walls of the trachea, which cause trouble of respiration varying of course to the size and seat of the tumors.

Actinomycosis of the lungs. Although the localizations have been currently reported in Europe, I believe they are exceptional in this country, and from my own personal observation and from numerous inquiries I have only seen one case, and it presented one large tumor in the left lung, which when cut open emitted a characteristic pus of a yellowish color, sticky and of a doughy consistency, rich in actinomycotic grains. From this tumor little fistulous tracts were observed all through the lung substance and at the end of each tract small tumors were found showing the same characteristics.

Mediastinum glands were also found to be affected, as well as some of the other glands of the body. A thorough examination of the skin and head of this carcass was made, but failed to find any external lesions. Sometimes the evolution resembles

all the characteristics of tuberculosis, symptoms are identical and can be recognized by the microscope only.

Actinomycosis has been found in the mammary glands. Its evolutions also resemble tuberculosis. Outside of its localizations on the maxillary bones it has been observed in the vertebræ and sternum. Here it invades the cancellated structure and by reproducing and developing causes the bony tissue to dilate and destroy, or the cancellated tissue may be absorbed. The growth is of a dense fibrous consistence and as the cause progresses a spongy appearance of the bone appears, which shows centres of actinomycotic grains. Mystrom in 1895 mentions a case of enzootic actinomycosis developed in the pharangeal region amongst young bovines maintained in the same pasture. Generalized actinomycosis, although being very rare, still is possible. When the glands contiguous to the actinomycotic lesions become charged with the disease then it is possible we may find a contamination of the whole system. As the glands become invaded with the actinomyces a spongy appearance is observed. In course of time the gland tissue is destroyed and the actinomyces become liberated in the circulation, and unless destroyed by nature's elements, and should a fruitful place of development be found, characteristic lesions may be seen. I am doubtful whether actinomycosis can be developed through the intestinal tract, as I believe the gastric juice of the stomach kills the germ or at least destroys their virulence or potency. My attention was called to a large umbilical tumor on a steer at one of the abattoirs. On tumor being removed and dissected microscopical examination showed all the characteristic lesions of actinomycosis. No other lesions were seen.

Swine.—This disease has been observed in the larynx, tongue and mammary glands. These tumors are hard and painful and afterward unite in a large mass, sometimes discharging a creamy, thick pus and on examination will be found to contain actinomyces. They often become very large. Exceptional localizations have been found in the lungs. Knolle reports a case of generalized actinomycosis, the parasites being found in the tongue, serous membranes, liver and vertebræ.

Sheep.—Actinomycosis of the sheep is rare.

Horse.—Actinomycosis has been found in the horse in nearly all centres, but it attacks as in bovines the bones by preference. In the tumors of the jaws we find a deliminated mass creating an abscess and persistent fistulous tracts, with a painful tumefication of the parts involved. In actinomycosis of

the tongue, the same alterations take place as in the ox. In actinomycosis of the neck the localizations present themselves as in the ox.

Right here I would call your attention to the peculiar similarity between this disease and fistulous withers of the horse. Do we not find the same characteristics in the two diseases? I say emphatically we do, and permit me to suggest a thought that when we find persistent and troublesome fistulous withers think of actinomycotic lessons and medicate accordingly. In some cases of schirrus cord the presence of actinomyces have been found.

Treatment.—When this disease was first discovered treatment was thought to be of no avail, but in 1885 Rasmussen observed that in man the iodide of potassium treatment clearly demonstrated a recovery. We are indebted to Nocard, for in 1892 he communicated his researches and demonstrated the marvellous effects of the iodide treatment on woody tongue. In this country an official commission was charged to investigate the same subject Out of a total of 185 animals affected in the jaws and parotid regions 131 or 71 per cent. recovered. 53 animals affected in a less degree completely recovered.

After Treatment.—The treatment is administered by the digestive tract in doses of from 2 to 4 drams daily. It should be continued for about 12 or 15 days and then stopped for a short interval, when if the lesions still persist medication should be again commenced. Iodism is little to be feared. The lesions of the tongue are more easily cured than the osseous lesions. Of course when the lesions withstand all internal remedies then surgical interference is necessary, combined with the internal treatment. Tincture of iodine externally is beneficial in some cases. In the prophylaxis of actinomycosis we ought to isolate as far as possible the diseased animals from the well ones until recovery is possible. We ought to cover the wounds with some kind of covering to prevent the pus from falling on the grass or straw, and when cleansing wounds to burn or sterilize as far as is possible all that have come in contact with the wound. Statistics do not show that the disease has been transmitted from animal to man, and although it is improbable it is not impossible. On the other hand, we have precise observations that the disease in man has been produced by vegetables, grasses, etc., and it follows as in animals the same procedure. Contagion from animals to man is then doubtful (unless through inoculation or vaccination),

but we ought to use all necessary hygienic precautions so that no infectious matter may be carried. Washing the hands in water after exposure to actinomycotic suppurations will be enoughto eliminate all dangers of infection. As contagion from animals to man is then doubtful we ought to give the human family the benefit of the doubt and reject for consumption all meats suffering with generalized actinomycosis, or where we find a fistulous tract opening into the mouth, and where the glands contiguous to the wound are diseased.

DISCUSSION.

Dr. Stewart: Owing to the absence of Dr. Bennett, who was announced to open the discussion of this paper, I will undertake to do so. And, first, I wish to compliment the essayist upon his careful preparation of the paper, and particularly upon the careful and systematic arrangement of the history, pathology and symptomatology of the disease. While the paper does not deal very fully with the problem of the treatment of the malady under consideration, yet it alludes to both medical and surgical interference. In illustration of the value of this side of the problem, I wish to relate a statement made to me by a practitioner living some thirty miles east of Omaha, while I was in attendance at a meeting of the Iowa and Nebraska associations in Omaha last week. He said that the treatment of actinomycosis was a profitable phase of his business; that he had been called to treat some ten or eleven cases, in one bunch, on the day previous to the meeting, and that he received five dollars for each case, the price current in that section; that he had received several such calls recently, and you can imagine that that sort of business would make him feel in good humor. Hence I feel that the practical side of this subject is of special importance to the practitioner in the country. The value of undertaking treatment will depend upon one's point of view. If the animals can be rendered marketable, the practitioner will hold that it is worth while, as also will his client. The meat inspector will find that while the external lesions have been destroyed or removed the internal lesions are still present, and would hold that treatment was of no great value. Relative to the employment of iodine internally administered, I wish to report some cases that we treated in the stock-yards at Omaha, and slaughtered to determine the results. In the cases where the soft parts alone were involved, the actinomycotic growths disappeared, also the tumefactions produced by them, and where the bony tissues were invaded the size of the tumors was

very greatly lessened, probably owing to the resorption of the fibrous tissue formations which are always found surrounding such bony growths. In one case in which there was a characteristic actinomycotic growth in the maxillary sinus it was noted that while the new formation was not removed, yet it seemed to be shrivelled and changed in its appearance, giving the impression that the actinomyces had been destroyed.

Dr. Verscheldon: I am very much interested in this question of the treatment of actinomycosis with iodide of potassium, and particularly am I anxious to know whether such cases will pass the inspector; whether the inspector can tell as to whether or not a case has been treated with iodide of potassium, and that in case he knows that it has been so treated if he will pass it.

Dr. Stewart: In answer to Dr. Verscheldon's question, I would say that it very much depends on the inspector, and whether he be a federal inspector or a municipal inspector; also somewhat upon his individual ideas.

Dr. Verscheldon: The farmer in my vicinity always puts the question: Can they be so treated that they will pass the government inspection? If they can be cured so that they will pass the government inspection, then it will pay to have them treated, and I am particularly anxious to know what is done with these cases in Kansas City.

Dr. Milnes: It has fallen to my lot to pass upon a large number of these cases in the Kansas City yards, and as we are provided with suitable chutes for confining animals, the examination is quite critical. In cases where the lesions in soft parts have been properly and successfully treated, and only small thickenings remain to show that disease has sometime been present, the cases are passed; but in other cases they are held for special post-mortem examination. Experience has shown, however, that in many cases where the external lesions are properly cured, there are found, upon post-mortem examination, lesions of the internal organs. Farmers often follow these cases from the scales where they have been detected by the government officials, to the special government retaining pen to ascertain, and if possible influence, the final decision in their favor. In many cases the lesions are confined to the external soft parts, and it would seem proper and advisable for practitioners to undertake their treatment, and profitable to the farmer to have them treated, and if I were in practice I would advise their treatment.

Dr. Moore: In treatment of these cases with iodide of potassium internally, expense is quite a factor, cases usually requiring a pound or more of the drug, which is quite expensive. So large a quantity need not be employed if during treatment the animal be not given foods containing large quantities of starch. Four ounces of the drug will suffice if the diet is restricted in the manner indicated.

Dr. Verscheldon: I understood the essayist to hold that there was a great similarity between actinomycosis and fistula of the withers, and I wish to inquire if he ever treated fistula of the withers with iodide of potassium, and what sort of success he had.

Dr. Wright: My statement was not based upon experience, but entirely upon theory. I do not know that the organism producing fistula of the withers has been determined; it had seemed to me that the disease processes were quite similar as to formation of fistulæ, the character of the pus, slow healing, etc.

Dr. Verscheldon: I was prompted to ask the question because of a case occurring in my practice. The case was suffering from what I concluded was crotalism, and was placed under the iodide treatment. As the animal also was afflicted with fistula of the withers, I noted that this disease seemed to be favorably influenced by the iodine.

Dr. Ernst: In the vicinity of Leavenworth, Fleming's Lump Jaw Cure has become quite popular with the farmers, as they seem to employ it quite successfully. I would like to know if the inspectors can tell whether cases have been treated with this remedy or not, and whether cases treated with this agent pass the inspection.

Dr. Milnes: It is not possible to tell, when the animals are marketed, whether they have been treated by the Fleming Lump Jaw remedy or some other. Many cases present the appearance of having been treated by some acid, which leaves a large cicatrix, and when applied to the diseased bone there remains a large ragged ulcer. When injected to the bottom of abscesses in the soft parts, destruction of the secreting membrane takes place, and perfect healing follows.

(*To be continued.*)

CHICAGO VETERINARY SOCIETY.

The fourth annual meeting of the society was called to order on Thursday evening, October 19, by President Robertson. So intensely interesting were the subjects presented that

the twenty members present could not resolve to adjourn until within a few minutes of midnight.

President Robertson called the attention of the members to the meeting of the Illinois State Veterinary Medical Association to be held in Chicago during November, and hoped that the Entertainment Committee of this society would not prove lacking in providing a programme that would be of interest to all, and presuming that in all probability a joint meeting of the two societies would be arranged for, at which a clinic would be one of the main featnres. He invited every one who had an interesting case at the time to present it. At the close of his remarks he opined that the passing of the bicycle as a competitor of the horse was an assured fact, and at present he could conceive of nothing to alarm him at the slow progress of the automobile.

Dr. Wm. C. Siegmund's application for membership received the favorable indorsement of the Board of Censors, and his election as a member of the society followed.

The election of officers for the ensuing year was now in order and resulted in the selection of the following by unanimous vote:

President—Dr. Joseph Hughes.
First Vice-President—Dr. L. A. Merrillat.
Second Vice-President—Dr. A. C. Worms.
Third Vice-President—Dr. H. W. Hawley.
Secretary—Dr. Jos. B. Clancy.
Treasurer—Dr. R. G. Walker.

Dr. Robertson in retiring from the chair presented the new President, and recalled the efforts of the past few years to have him consent to his election to the office. In the past his excuse has been sustained by the society. Now it is overruled, and we may congratulate ourselves at his acceptance.

President Hughes rehearsed his reasons for declining in the past, it being his opinion that some one not so directly connected with either of the veterinary colleges should fill the office. He therefore came to the meeting unprepared for the honor bestowed.

The next business of the evening was the appointment of committees, and the following were named:

Board of Censors.—Dr. E. L. Quitman, Dr. Allen, Dr. Dubia.

Entertainment Committee.—Dr. Robertson, Dr. Worms, Dr. E. L. Quitman.

Legislative Committee.—Dr. Walker, Dr. Hawley, Dr. Merillat, Dr. Ryan, Dr. Allen.

Literary and Publication Committee.—Dr. A. H. Baker, Dr. A. M. Casper, Dr. L. Campbell and the Secretary, member *ex-officio.*

Dr. H. W. Hawley reported a case of rupture of the tendon of the flexor metatarisi and urged all who were interested in the case to call and examine it. In the discussion that followed Dr. Jos. Hughes described the method of operating to effect a cure in these cases.

Dr. E. L. Quitman reported a similar case, following which many other reports were discussed, and many of those were willing to continue the discussion, when a motion to adjourn prevailed at 11.55 P. M. JOS. B. CLANCY, *Secretary.*

The monthly meeting of the society was convened at Hotel Brevoort on Thursday evening, November 9th.

President Hughes presided, and the following members were present: Doctors Campbell, Casper, Clancy, Dubia, Donovan, Howe, Hughes, Hawley, Merillat, Nelson, Pierce, Pistor, P. Quitman, E. L. Quitman, Robertson, Siegmund, Sugroesser, Walker, Worms, and Dr. Morris Wooden, whose application for membership was favorably indorsed by the Board of Censors, was elected a member of the society.

A motion presented by Mr. Robertson prevailed, instructing the President to appoint a committee of three whose duty it shall be to report at the next meeting some place available for a permanent meeting place for the society.

Dr. E. L. Quitman now prefaced his paper with an apology for not going into the subject more thoroughly; pressure of business had prevented him from finishing it as he wished. The paper was well received and provoked a lengthy and spirited discussion, in which Dr. A. H. Baker thought "it was open to a little friendly criticism," and he proceeded to express his surprise at some of the statements it contained. It was resolved that the questions brought out in the paper be laid upon the table for further consideration, and the terms "serviceably sound," "wind and work," etc., in use at the auction ring of the Union Stock Yards, are as indefinite as ever. Brush firing, Dr. Robertson confessed, was something new to him, and he wondered if there were others. Yes, there were others who confessed their utter and dense ignorance. Dr. Wm. C. Siegmund explained the method and its effect, and many contended that

the same results could be accomplished with less bother by the use of blisters. JOS. B. CLANCY, *Secretary.*

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The regular monthly meeting was called to order at eight o'clock P. M., in the lecture room of the New York American Veterinary College, 141 W. 54th St., November 1, 1899, with President Robertson in the chair. After roll-call, the minutes of the previous meeting were read and approved.

The committees having no reports to offer, reading of papers was next in order.

Dr. Wilfred Lellman read a paper entitled "Science and Practice," which was freely discussed and much appreciated by the members present. Dr. Bell next read a paper which embraced a report of "Two Cases of Equine Rabies," met in his practice. This paper proved to be of extreme interest, and was discussed freely, both from practical and scientific standpoints.

Dr. O'Shea moved for a vote of thanks to the essayists, which was seconded and carried.

Under the head of "New Business," a change in the By-Laws was voted upon as follows: Moved by Dr. Bell and seconded by Dr. O'Shea, that Art. XI of the By-Laws be changed so as to read; "The initiation fee shall be five dollars, and the annual dues shall be two dollars." The usual thirty days' notice having been given, before an open meeting, the same was voted upon, and carried, by a majority vote.

Moved and seconded that the meeting adjourn.

ROBERT W. ELLIS, D. V. S., *Secretary.*

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

President Roscoe R. Bell has made the following appointment of Committees for the ensuing year:

Executive Committee.—Roscoe R. Bell, Chairman; Wm. Henry Kelly, W. L. Baker, W. L. Williams, C. D. Morris.

Legislative Committee.—Wm. Henry Kelly, Chairman; James Law, Arthur O'Shea, C. D. Morris, Roscoe R. Bell.

Committee on By-Laws.—W. L. Baker, Chairman; W. L. Williams, C. D. Morris.

Committee of Arrangements.—W. L. Williams, Chairman; James Law, J. A. Genung, Chas. Cowie, C. D. Morris.

NEWS AND ITEMS.

DR. H. D. GILL has been winning laurels with his fast trotters and pacers on the Speedway and on the track.

"I HAVE BEEN READING YOUR VALUABLE REVIEW and appreciate it very much."—*G. R. Stewart, V. S., Calumet, Mich.*

THE MCKILLIP VETERINARY COLLEGE, Chicago, Ill., has sixty-two students in attendance this year, a notable increase over former years.

PROF. H. D. HANSON'S book, "Prescription Writing," is nearly ready for distribution, and veterinary practitioners will find it a very helpful companion.

LITTLE is heard of the Veterinary Service Association in the vicinity of New York, and there is not much danger of its becoming a competitor for practice worth having.

A PROPOSED AMENDMENT to the by-laws of the American Veterinary Medical Association provides for the election of five instead of three Vice-Presidents.

PROF. E. A. A. GRANGE, of Michigan, has been in New York for some time lecturing before the public schools in the interests of the American Society for the Prevention of Cruelty to Animals.

A CURIOUS DELIVERY.—The *Giornale della Reale Societa Veterinaria* reports the case of a mare which was delivered of twins—one a mule, the other a filly; the mother was white, the mule black, the filly bay.—(A. L.)

Dr. T. E. WHITE, State Veterinarian of Missouri, is a candidate for reappointment, and it is hoped that he will succeed himself, since he has been a conservative, dignified officer, and a credit to his profession.

THE RUSSIAN GOVERNMENT is buying up many of America's best breeding horses with the object of improving its own. With the English Army as a heavy purchaser of remounts and our own government sending ship-loads to the Philippines the surplus stock of the country is being rapidly reduced.

THE SEASON for rubber horse shoe pads is at hand, and the manufacturers are busy. The Air-Cushion Pad, advertised elsewhere, seems destined to take a leading position among them. From a veterinary standpoint they are correct, and should receive the endorsement of veterinarians.

THE NEW YORK COUNTY V. M. ASSOCIATION has reduced the annual dues from $5 to $2, and changed its place of meeting from the Academy of Medicine to the lecture-room of the

New York-American Veterinary College, 141 West 54th Street. This is a popular move, and it is hoped that many new members will be secured, especially among the younger members of the profession of the Metropolitan district.

OPERATIVE ANTISEPSIS.—It is now recommended that tincture of soap be used to disinfect both the site of operation and the operator's hands, for the reason that the tincture penetrates the several layers of the epidermis, rendering them aseptic for some time, and the evaporating of the alcohol makes drying with cloths unnecessary. The part to be operated upon should be thoroughly scrubbed for from three to five minutes with the tincture.

ARMY VETERINARIANS IN BELGIUM.—The organization of veterinarians in the armies of Europe may be interesting to Americans at this time, since they may soon be called upon to undergo such an organization in the army of the United States. From the *Repertoire* of Mr. Laquerrieré we extract the following: The principal dispositions of a recent royal order are: 1 chief veterinarian, with rank of lieutenant-colonel; 4 principal veterinarians, with rank of major. In the regiments veterinarians are divided into: First class, with rank of first captain; second class, with rank of second captain; third class, with rank of lieutenant; adjunct veterinarians, with rank of second lieutenant.—(A. L.)

MR. ALEX. EGER, of 34 East Van Buren Street, Chicago, Ill., publisher and dealer in veterinary books, drugs and instruments, has just issued "A Guide to Practical Meat Inspection," by F. Fischœder, translated by A. T. Peters, D. V. M., University of Nebraska, and will have ready within the next fortnight "Outline of the Antiseptic Treatment of Wounds for Veterinarians," by Dr. H. Frick, translated by himself. He will make a tour of the principal cities of Canada and the United States in the interests of the books, especially those cities the seat of veterinary colleges. Mr. Eger is the authorized agent of the REVIEW, and will receive subscriptions to this journal at the same time. His enterprise is deserving of success, and we trust the profession will give him the encouragement he deserves.

DIED OF ANTHRAX.—Philip Cooney, a longshoreman, 26 years old, who lived at 24 Atlantic Avenue, visited the hospital on Monday. He was almost in a state of collapse. He informed Dr. Mildenberg, the house surgeon, that he had been at work at one of the big warehouses on the river front in Brooklyn unloading hay and grain from a vessel that had come from

a Southern port. On Saturday he noticed a small swelling on the left side of his neck immediately under the angle of the jaw. He pricked it with a pin. Soon his neck and the glands situated there began to swell. Dr. Mildenberg and the other surgeons diagnosed the case as one of anthrax or malignant pustule. Soon his body was much swollen from the neck to the waist. His temperature was four degrees below normal and at times it was impossible to perceive his pulse. He continued to get worse, and on Tuesday night he died. He was in great pain all the time he was in the hospital. The case was reported to Coroner Burger and Dr. Hartung made an autopsy. By means of microscopical tests it was proved without doubt that death was due to anthrax. Dr. Mildenberg, who watched the case carefully, said the anthrax bacillus must have been in the hides which Cooney was handling. There was a scratch on his neck and he must have accidentally rubbed his hand on his neck. The germ thus found access to the blood. He said that other persons might handle the hides for years and escape the anthrax bacillus, just the same as hundreds of people escape the bacillus of consumption. The result of anthrax poisoning, he said, was that all the tissues and the organs of the body became diseased. —(*New York Sun, Nov. 17.*)

ALEX. EGER, 34 East Van Buren St., Chicago, Ill.,

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